**Saudi Arabia: Measures of Transition From a Rentier State**
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by

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## Introduction

The purpose of this paper is to assess the extent to which the country's long-term economic development strategy is meeting its objectives. Early on after the 1973-74 oil boom the government decided that a high proportion of the country's oil revenues should be spent in a manner that would encourage private sector investment and production (Looney and Frederiksen, 1985). Part of a larger political/military strategy (Kechichian 2000) the economic component was to diversify the economy away from oil to the extent that self-sustaining growth could occur in the major non-oil sectors of the economy. Clearly, the goal is the creation of an economy capable of functioning independently of developments in the oil sector. Clearly this strategy was intended to provide more stability to the country's pattern of economic growth and development. While many oil countries express this desire, the Kingdom's planners put together a coherent strategy of investment and subsidies focused on achieving this end result (Looney 1989). At least publicly, the strategy has remained in place since the early 1970s.

While goals of this strategy seem straight forward, arriving at an objective assessment of progress made to date is extremely difficult. Examining the patterns private sector growth does not necessarily come to grips with the issue. Output can expand simply through a continuation of government expenditures or momentum from past public allocations. If one could show that, over time, a linkage from private expenditures to private output was growing stronger than that of public expenditures to private output one might still argue that the economy had evolved a bit, but that private expenditures themselves could not be sustained without a steady infusion of government funds. Conceptually then, the methods by which one defines and measures oil independence are at the crux of assessing the success of the country's development progress to date.

The paper is divided into several parts: the first sections provide a brief overview of the Macroeconomy. Trends in output and expenditure are examined, and the more important (relevant) patterns identified. Here several linkages are made to earlier studies of the country's growth mechanisms. (Looney, 1989, 1992, 1993, 1995, 1996, 1997). The second part of the study develops an operational test for measuring

the extent to which the private sector is replacing government expenditures as the prime mover of the non-oil sector of the economy. Here several relatively new statistical techniques, co-integration and error correction are examined for their potential of shedding light on the issues. Based on this discussion several statistical tests are devised to measure changes over time in the Kingdom's economic mechanisms. Is the public sector becoming less dominant and in what sense? Is the private sector showing that it is now primarily responsible for large segments of non-oil sector growth? Based on the results of this analysis the final section discusses several policy implications.

**Patterns of Growth and Expenditure, 1964-1998**

The country has experienced periods of remarkable growth and other periods of relative stability and even decline. For the 1964-98 period as a whole (Table 1), GDP at constant prices increased at an average annual rate of 5.7 percent, but with private sector GDP and non-oil Gross Domestic Product (GDP) an even faster 6.8 and 6.7 percent respectively. Public expenditures have experienced a sharp deceleration, increasing by double digits in the 1964-80 period, but with negative rates associated in investment and non defense during the subsequent period. Private expenditures have been a bit more stable, but these too have experienced a general downtrend in the latter time periods.

Several other patterns are of interest:

- After an initial surge following the 1974-74 oil price increases public sector investment/infrastructural expansion has been flat, actually experiencing a fairly large (-6.4% per annum) contraction over the 1980-98 period.

- Public consumption was the only major category of governmental expenditures to haw a positive rate of growth in the post 1980 period.

- Of the major government expenditure categories, defense expenditures were the most rapidly growing in the last 10 years (1989-98).

- In contrast, private sector investment has generally expended more rapidly than consumption over the 1980-98 time frame.

- The general pattern of private sector expenditures is considerably more stable than those of the public sector.

- Construction has been by far the most volatile sector growing at an average annual rate of 42.3 percent during the 1964-80 period but at a –0.3 percent rate during the 1980-98 period

- One of the most rapidly growing sectors, agriculture is the one in which the country probably enjoys the least natural advantages.

Table 1

Saudia Arabia: Rates of Growth, 1964-1998

(average annual %)

| Sector | 1964-1998 | 1964-1980 | 1964-1989 | 1974-1998 | 1980-1998 | 1989 1998 |
|---|---|---|---|---|---|---|
| Sector Output | | | | | | |
| Agriculture | 5.3 | 3.4 | 6.7 | 6.9 | 6.9 | 1.5 |
| Mining | 6.7 | 12.9 | 8.8 | 3.9 | 1.6 | 1.2 |
| Manufacturing | 9.4 | 14.8 | 12.0 | 7.4 | 4.9 | 2.6 |
| Electricity, Gas, Water | 6.3 | 13.6 | 7.8 | 7.0 | 0.3 | 3.2 |
| Construction | 14.8 | 42.3 | 18.4 | 7.9 | -0.3 | 4.3 |
| Wholesale, Retail Trade | 7.6 | 14.6 | 10.1 | 6.5 | 1.7 | 1.1 |
| Transport, Communications | 11.8 | 23.9 | 15.9 | 5.7 | 7.8 | 1.3 |
| Ownership of Dwellings | 5.5 | 13.1 | 7.1 | 2.3 | -0.8 | 1.2 |
| Finance, Insurance | 5.6 | 9.6 | 7.8 | 4.5 | 1.0 | 0.7 |
| Services | 5.3 | 7.2 | 7.2 | 4.7 | 2.9 | 1.2 |
| Total Output | | | | | | |
| GDP | 5.7 | 11.0 | 6.7 | 3.1 | 1.2 | 3.0 |
| Oil GDP | 4.3 | 10.0 | 3.8 | 0.7 | -0.5 | 5.8 |
| Non-Oil GDP | 6.7 | 11.7 | 8.5 | 5.2 | 2.3 | 1.8 |
| Private Sector GDP | 6.8 | 11.4 | 8.7 | 5.6 | 2.9 | 1.5 |
| Public Sector GDP | 6.4 | 12.5 | 7.8 | 4.4 | 1.2 | 2.6 |
| Public Expenditures | | | | | | |
| Investment | 5.8 | 21.4 | 8.9 | 0.4 | -6.4 | -2.3 |
| Infrastructure | 5.7 | 19.2 | 7.6 | 2.2 | -5.0 | 0.6 |
| Consumption | 7.8 | 15.0 | 10.6 | 4.3 | 1.8 | 0.5 |
| Defense | 8.7 | 21.0 | 11.1 | 4.7 | -1.1 | 2.5 |
| Non-Defense | 5.1 | 15.7 | 8.5 | 3.2 | -3.5 | -3.7 |
| Total National Account | 6.3 | 14.6 | 8.6 | 3.9 | -0.5 | 0.1 |
| Private Expenditures | | | | | | |
| Investment | 7.2 | 5.9 | 8.4 | 4.1 | 2.3 | 1.2 |
| Consumption | 6.4 | 12.5 | 8.6 | 5.0 | 1.3 | 0.5 |
| Total Private | 6.6 | 12.6 | 8.6 | 4.8 | 1.5 | 1.2 |

Source: Saudi Arabian Monetary Agency, Annual Report, various issues.

Despite the government's persistent efforts to diversify the economy away from oil, the hydrocarbon industry is still dominant in several important regards: oil production still accounts for roughly 30 percent of Gross Domestic Product (GDP), 90 percent of exports and 70 percent of budget revenues. Therefore the economy remains highly vulnerable to fluctuations in international oil markets. This is readily apparent , as in 1998 when nominal GDP contracted by 12 percent, mainly due to a 25-year low price of Arabian Light, the benchmark Saudi crude, averaging below $12 a barrel. Even today the market rally in oil prices beginning in April 1999 has dramatically changed the whole atmosphere of the country from one of frustration and despair to that of confidence and optimism (Siddiqi, 1999).

On the other hand the last several decades, the differential growth rates noted above have created major structural shifts in the structure of the Saudi Economy. In particular (Table 2):

- In contrast to most developing countries, the share of agriculture in (non-oil) GDP has increased, from 8.1 percent in 1975 to 13.4 percent in 1998

- Manufacturing has shown a steady expansion from 5.5 percent of non-oil GDP in 1975 to 9.5 by 1998

- Non-oil GDP has also experienced a steady expansion, increasing from 36.5 percent of GDP before the oil boom (1970) to nearly 70 percent by 1998.

- With regard to public expenditures, investment has shown the most dramatic change falling from 12.9 percent of GDP in 1980 to 5.9 percent in 1998. On the other hand public investment was only 5.3 percent of GDP before the oil boom (1970)

- In contrast public consumption has increased from 16.8 percent of GDP in 1970 to 33.1 percent in 1998

- Defense expenditures are relatively high at 12.6 percent of GDP. This is up from 7.4 in 1970 but down from 16.0 in 1990

- Non oil revenues are quite low, accounting fro only around 8.7 percent of GDP, although this is up from 0.9 in 1970.

- Private investment has shown good progress increasing from 5.1 percent of GDP in 1970 to 12.6% in 1998

- Still, combining private and public expenditures, compared with countries in the same income range the country has a higher share of GDP allocated to consumption and a lower share to investment.

Table 2

Saudi Arabia: Economic Structure, 1970-1998

(average annual %)

| Sector | 1970 | 1975 | 1980 | 1990 | 1995 | 1998 |
|---|---|---|---|---|---|---|
| Sector Output (% non-oil GDP) | | | | | | |
| Agriculture | 12.7 | 8.1 | 6.1 | 13.9 | 13.6 | 13.4 |
| Manufacturing | 6.0 | 5.5 | 6.0 | 8.6 | 8.8 | 9.4 |
| Mining | 0.6 | 0.7 | 0.5 | 0.5 | 0.5 | 0.5 |
| Refining | 16.9 | 9.0 | 6.2 | 9.1 | 12.9 | 13.0 |
| Electricity, Gas, Water | 3.7 | 2.3 | 3.9 | 3.3 | 3.7 | 3.8 |
| Construction | 11.9 | 21.9 | 20.0 | 9.1 | 8.8 | 9.0 |
| Wholesale, Retail Trade | 13.1 | 15.4 | 22.4 | 20.5 | 20.2 | 20.1 |
| Transport, Communications | 18.3 | 10.4 | 11.9 | 11.6 | 11.5 | 11.3 |
| Ownership of Dwellings | 8.6 | 12.8 | 11.5 | 6.6 | 6.6 | 6.6 |
| Finance, Insurance | 4.5 | 4.5 | 5.0 | 4.2 | 4.0 | 3.9 |
| Services | 3.1 | 2.4 | 2.1 | 2.3 | 2.2 | 2.2 |
| Total Output (% GDP) | | | | | | |
| Oil GDP | 63.5 | 71.1 | 69.6 | 38.0 | 37.2 | 30.2 |
| Non-Oil GDP | 36.5 | 28.9 | 30.4 | 62.0 | 62.8 | 69.8 |
| Private Sector GDP | 25.9 | 17.3 | 17.1 | 36.1 | 36.5 | 40.6 |
| Public Sector GDP | 10.7 | 11.6 | 13.3 | 25.9 | 26.1 | 29.2 |
| Public/Private Output (% non-Oil GDP) | | | | | | |
| Private Sector GDP | 70.2 | 59.8 | 56.3 | 58.3 | 58.1 | 58.2 |
| Public Sector GDP | 29.8 | 40.2 | 43.7 | 41.7 | 41.6 | 41.8 |
| Public Fiscal (% GDP) | | | | | | |
| Investment | 5.3 | 10.7 | 12.9 | 11.0 | 5.3 | 5.9 |
| Consumption | 16.8 | 17.6 | 15.8 | 31.2 | 26.1 | 33.1 |
| Defense | 7.4 | 9.1 | 13.3 | 16.0 | 10.5 | 12.6 |
| National Account Expend | 22.2 | 28.3 | 28.7 | 42.2 | 31.4 | 39.1 |
| Budgetary Expenditure | 26.9 | 19.5 | 36.4 | 46.7 | 31.8 | 34.9 |
| Oil Revenue | 24.2 | 57.5 | 36.5 | 28.7 | 21.5 | 28.9 |
| Non-Oil Revenue | 0.9 | 3.6 | 4.2 | 12.4 | 7.1 | 8.7 |
| Private Expenditures (% GDP) | | | | | | |
| Investment | 5.1 | 6.5 | 5.5 | 7.0 | 11.4 | 12.6 |
| Consumption | 28.4 | 14.6 | 22.2 | 40.5 | 41.1 | 42.2 |
| Total Private | 33.5 | 21.1 | 27.7 | 47.5 | 52.5 | 54.8 |

Source: Saudi Arabian Monetary Agency, Annual Report, various issues.

The public sector budget has also undergone considerable structural change in recent years (Table 3). Detailed and consistent budgetary data begins in 1979. Since that date:

- The most dramatic grins in budgetary share have been in the area of human resource development. This expenditure category increased its budgetary share from around 8.5 to over 23 percent by 1998.

- Health and social development also expanded faster than the overall increase in budgetary allocations increasing their share from 4.6 in 1997 to 8.4 in 1998 .

- Interestingly enough, these two categories were the only ones averaging a positive rate of growth (2.8 for human resource development and 0.6 percent per annum for health).

- The biggest budgetary declines were in several of the economic areas: transport and communications –7.3 percent per annum, economic resource development –6.8 and infrastructure –7.7.

- Other major contractions were in government lending institutions –20.2 percent per annum and public administration –4.3 percent.

- Another major area of the budget defense, although growing at an average annual rate of –0.3 still increased its budgetary share from 26 percent in 1979 to nearly 40 percent by 1998.

Given these patterns together with the fact that the total budget contracted at an average annual rate of 2.5 percent, this clearly suggests that some sectors were more protected than others. Hicks and Kubisch (1984) and Hicks (1991) were the first to examine the manner in which countries protect selected components of the budget during periods of austerity.

In their original study, the average decline in the growth of real government expenditures for their sample of countries was 13 percent. Associated with this decline was a contraction of only five percent in the social sectors (producing a vulnerability index of 0.4). By contrast the index was 0.6 for the administrative defense sectors and over one percent for production and infrastructure. In short, the various social sector were less vulnerable to cuts than defense and administration which, in turn, were considerably less vulnerable than production and infrastructure, contrary to the generally accepted view.

The fact that social sectors and defense were both relatively protected suggests that there were high political costs associated with reducing them. On the other hand, countries appeared to have been more willing to cut spending on infrastructure and production which of course, are likely to have adverse implications for longer term growth, but few early direct and immediate costs.

Table 3

Saudi Arabia: Public Sector Budget, 1979-1998

(average annual %)

| Sector | 1979 | 1985 | 1990 | 1995 | 1998 |
|---|---|---|---|---|---|
| Budgetary Shares (% Total Budget) | | | | | |
| Human Resource Development | 8.46 | 12.27 | 15.58 | 17.94 | 23.21 |
| Transport & Communications | 11.31 | 7.25 | 4.70 | 4.13 | 4.35 |
| Economic Resource Development | 6.89 | 4.54 | 2.56 | 2.57 | 2.97 |
| Health and Social Development | 4.55 | 6.45 | 6.82 | 6.77 | 8.36 |
| Infrastructure Development | 3.13 | 3.46 | 1.37 | 0.93 | 1.1 |
| Municipal Services | 5.88 | 5.95 | 3.31 | 3.25 | 3.34 |
| Defense and Security | 26.12 | 31.98 | 34.32 | 33.00 | 39.91 |
| Public Administration | 18.04 | 19.29 | 27.96 | 26.47 | 12.79 |
| Government Lending Institutions | 11.46 | 4.65 | 0.59 | 0.32 | 0.26 |
| Local Subsidies | 4.16 | 4.17 | 2.8 | 4.61 | 3.71 |
| Budgetary Growth (% Average Annual Rate) | | | | | |
| Human Resource Development | 2.8 | 2.6 | 3.1 | -4.1 | 3.3 |
| Transport & Communications | -7.3 | -10.5 | -9.0 | -9.2 | -2.7 |
| Economic Resource Development | -6.8 | -10.0 | -13.2 | -6.7 | 0.1 |
| Health and Social Development | 0.6 | 2.2 | -1.5 | -6.9 | 0.8 |
| Infrastructure Development | -7.7 | -1.9 | -19.1 | -13.7 | -4.3 |
| Municipal Services | -5.4 | -3.4 | -13.4 | -7.1 | -1.6 |
| Defense and Security | -0.3 | -0.3 | -1.2 | -7.5 | 0.2 |
| Public Administration | -4.3 | -2.5 | 4.9 | -7.8 | -10.9 |
| Government Lending Institutions | -20.2 | -17.0 | -35.5 | -17.7 | 0.00 |
| Local Subsidies | -3.1 | -3.5 | -10.1 | 3.0 | 1.8 |
| Total Budget | -2.5 | -3.6 | -2.6 | -6.8 | -1.7 |
| Budgetary Growth (Elasticities)) | | | | | |
| Human Resource Development | [0.51] | [0.72] | [1.19] | 0.60 | [1.94] |
| Transport & Communications | 2.92 | 2.92 | 3.46 | 1.35 | 1.59 |
| Economic Resource Development | 2.72 | 2.78 | 5.08 | 0.11 | [0.06] |
| Health and Social Development | [0.24] | [0.61] | 0.58 | 1.01 | [0.47] |
| Infrastructure Development | 3.08 | 0.53 | 7.34 | 2.01 | 2.53 |
| Municipal Services | 2.16 | 0.94 | 5.15 | 1.04 | 0.94 |
| Defense and Security | 0.12 | 0.08 | 0.46 | 1.10 | [0.12] |
| Public Administration | 1.72 | 0.69 | [1.88] | 1.15 | [6.41] |
| Government Lending Institutions | 8.08 | 4.72 | 13.65 | 2.60 | 0.00 |
| Local Subsidies | 1.24 | 0.90 | 3.88 | [0.44] | [1.06] |

Source: Saudi Arabian Monetary Agency, Annual Report, various issues.

Saudi Arabia appears to fit this pattern fairly well although some of the Kingdom's budgetary categories do not overlap with the standardized IMF categories used by Kicks and Kubisch. In the Saudi case three groups of budgetary items emerge: (a). Highly favored categories: those in the bottom part of Table 3 in brackets. These sectors actually expanded who actually expanded in real terms while the budget contracted (b) favored those sectors that contracted at a slower rate than the overall budget i.e., they have an elasticity less than 1.0. Finally those sectors that contracted at a rate more rapidly than the overall budget (thus having an elasticity greater than one).

For the period as a whole and most of the sub periods human resource development and health and social development fall in the highly favored category, Defense is usually favored and in the 1990s it along with public administration were highly favored. As with Hicks and Kubish, most of the economic sectors were not favored with there budgetary chares in some cases contradicting dramatically.

The patterns reported above are also consistent with an earlier study (Looney 1991) of Saudi Arabian budgetary allocations using regression analysis. That study found:

- Human resource development and health and social development were the only budgetary categories to have their budgetary shares increase with expanded unintended deficits. They were also the only sectors to have their budgetary shares increase during periods of increased actual (realized) budgetary deficits.

- Human resource development and health did not have their budgetary shares expanded with increases in expected revenue. This finding is consistent with the notion that because of their high priority, their funding levels were assured. Given This, marginal increases in revenue could be safely used by the authorities to fund lower-priority projects.

- The deficit-related expansion in human capital seems to have come in part at the expense of longer-term investment in economic capacity. Specifically (a1), transportation and communications, (b) economic services and (c) infrastruct8ure all had their budgetary shares contract during periods of increased unexpected and actual deficits. This finding is consist with the findings of Hicks and Kubisch.

- In general the main findings of this study confirm the high priority granted human resource development by the Saudi authorities. Resources to this sector have been preserved relative to other sectors during the period of austerity. Budgetary cuts have occurred in Saudi Arabia, but education has been relatively speared. The long-term nature of this commitment by the Government to this sector is also evidenced by the fact that it appears relatively safe from budgetary cuts during of budgetary deficit. The same could be said for health and social expenditure.

- While defense has regained its leading share of the budget during the recent period of relative fiscal austerity, Saudi Arabia does not appear to have fallen into the guns versus education syndrome. In fact the two types of expenditures appear to complement each other in the minds of the Saudi budgetary authorities.

Because of its importance to the economy, the budgetary dynamics and tradeoffs associated with defense expenditures have been the focus of several other studies. In particular one study (Looney 1993) of Saudi Arabia in particular and the Middle East Region in general found that in a study of the manner in which middle east countries allocate budgetary shares to defense and subsequently the impact of defense expenditures on the economy it was found that:

- Defense budgetary tradeoffs are often more complex than that associated with other budgetary categories. In part this simply reflects differences in budgetary priorities across countries. However, this complexity also stems from the fact that increased levels of government deficits can offset or reinforce the impacts that expanded defense expenditures have on other budgetary shares.

- The analysis indicated that defense socio-economic trade-offs also vary considerably depending on whether the country has an environment characterized by high or low level of military expenditures. This usually occurs in both the central government budget and in relation to the overall size of the economy.

- During the 1980s defense expenditures in these two environments also had a differential impact on economic growth. In the high defense expenditure countries, increase in the share of resources allocated to defense did not provide any appreciable stimulus to the economy. For those countries increases in the defense in the central government budget actually tended to reduce the overall rate of growth. In the low defense countries however, increases in the defense burden did provide a positive stimulus to economic growth. Furthermore increases in the share of defense in the central government budget did not retard that growth.

- There are several explanations for these patterns. In the Middle East at least the high defense countries appear to cut economic expenditures to free up resources for further expansion in the military. This may occur because of the political costs in cutting non-defense expenditures, particularly over long periods of time. Again, with several exceptions, the low defense countries seem to have more flexibility on accommodating increased levels of military expenditure. Perhaps as a result economic programs are not as susceptible to cuts in these countries.

- Most likely there are long run costs associated with the manner in which Middle Eastern countries alter budgetary shares to accommodate increased military expenditures. For high defense countries as a whole, increased budgetary shares allocated to defense in the 1970s had a positive impact on

> growth in the 1980s. Increased budgetary shares to defense in the 1980s however impacted negatively. Given the observed lagged nature of many of negative impacts in these countries on economic services, this may indicate the neglect of economic services, infrastructure and the like. If that is the case countries such as Saudi Arabia may be finding that high defense burdens are starting to take a heavy toll on economic growth. If these lagged impacts are stable, we can expect non-oil GDP growth to expand at rates somewhat below its long run growth path growth path. For the Kingdom, a reorientation of budgetary priorities may not provide an immediate stimulus to its economy.

These findings are consistent with those of Krimly (1999) who, perhaps painted a bit brighter picture than the one summarized above:

> What was surprising in Saudi Arabia's response to the challenges of the past decade is not merely the relative effectiveness of the state's responses but the minimum political costs they entailed. This suggested a degree of resiliency by the Saudi state that was much greater than could be expected for rentier states.

Krimly went on to note that three areas in particular require further attention:

> The domestic extraction capabilities of the state are still insufficient almost entirely dependent on indirect taxation. Other Gulf states have already taken the important step of introducing personal incomes taxes to much demands; (2) the legal system and the official statistical base need urgent reforms if official plans to invite external investments are to be realized; and (3) there is a need for the privatization program to proceed at a quicker rate and with greater transparency.

Clearly the Saudi budget has changed considerably over the years. While the fall in expenditures are the most dramatic manifestation of this phenomena, the more subtle and less publicized shift in the composition of expenditures is perhaps just as significant in our understanding of the country's growth dynamics. If for example there has been a decline in the ability of governmental expenditures to stimulate the non oil sector, has this occurred because of some sort of diminishing returns to public expenditures? or instead, is the cause due to the change in the composition of these expenditures? This issue is much in the background in the sections that follow.

**Criteria and Tests of Non-oil Development**

To examine the possible linkages between public and private sector expenditures/output on non-oil production in Saudi Arabia a co-integration error-correction analysis was undertaken. While mathematically fairly technical (Looney 1998), this technique has a straightforward intuitive appeal. Basically cointegration/error-correction attempts to determine whether two series (such as private expenditures and sector output) move together over long periods of time (Looney 1998).

The analysis accepts the fact that short run shocks can occur whereby rapid increases (i.e. public sector investment) in one variable cause movement in the other (i.e. construction). However, if the two variables have developed a long-run linkage, whereby an ongoing-stable set of links have been established, then equilibrium will be restored with the speed of adjustment affected by the deviation from that long run pattern. Specifically the speed of the longer term adjustment will be dependent on the magnitude of the deviation from the long run equilibrium pattern as well as the strength of the linkage between the two variables. In short, the year-to-year growth over time of a sector such as non-oil manufacturing can be decomposed into two parts: the first associated with a short run shock (say increased public sector consumption) and the second that drawing on the longer-term linkages established with the causal (here public sector consumption) variable.

The technique has been used successfully to assess several other facets of the Gulf economies. For example, Al-Yousif's (1997) study on exports and economic growth in the region found that in the case of Saudi Arabia, Kuwait, UAE and Oman there are no long-run relationship between exports and economic growth. On the other hand, the study found that exports have had a positive and significant shorter run impact on growth in the four countries. No doubt, one reason the long run relationship did not hold up is because the significant relationship is not between exports per se but how the receipts from these are spent (invested) by the respective governments. Another factor is, as the author notes, that while still highly dependent on oil these Arab Gulf countries have been engaged in efforts to diversify their domestic economies and the structure of their trade. Apparently these efforts have been successful in the sense that the economies are now capable of some measure of growth independent of developments in the oil sector.

In their study of Saudi Arabian imports, Doroodian, Koshal and Al-Muhana (1994) found, among other things, that the duration of the adjustment of import volumes to changes in the explanatory variable was approximately two years. As the author notes this interval seems to be longer than that obtained by other researchers..

Perera (1994) analyzed the long-run money demand function of GCC countries, using Johansen's cointegration methodology. His study suggests that variables entering into the demand for narrow money equation may form a cointegrated system after the inclusion of the nominal effective exchange rate. However this occurred only in the case of Saudi Arabia. In contrast, the results indicate the presence of a long run demand function for broad money for Saudi Arabia and the UAE when real gross domestic product, interest rates, price level and nominal effective exchange rate are included in the system. The results suggest that modeling money demand as real money demand in Saudi Arabia and Bahrain is a correct procedure. Further international interest rate variable plays an important role in determining the demand for money in Saudi Arabia, UAE and Bahrain.

In general, these studies demonstrate that the technique is capable of yielding insights not often captured by the more conventional regression methods. A common theme is that economic development in the Gulf is becoming a more complex process as the economies mature and begin to diversify away from a complete reliance on oil

revenues and associated public sector expenditures. For the purposes of this study the technique appears capable of developing a new, operational way to assess the extent of diversification from a rentier state.

In the early phases of economic development in oil-based economies, the expansion of many types of sectoral growth in oil-based economies are highly dependent on government expenditures. One sign of achieving a diversified, self-sustaining economy should therefore be the severing or at least weakening of the longer term linkage with public expenditures and its replacement by a similar linkage to the expansion of private sector expenditures/production. Specifically when and if the Saudi non oil economy develops to the point where its growth can occur independently of government expenditures, then it has graduated from a pure oil economy into one where oil will continue to play a role but not complexly control the fate of the non-oil economy. While the patterns of output (Chart 1) and expenditures (Chart 2) are suggestive of a breakdown of the early oil based relationships, conventional regression analysis would not be able to make these distinctions because the short run spurts of growth associated with government expenditure shocks often mask the possible weakening of its longer term links to the non-oil economy.

Following this line of argument, our proposed development classification scheme for the non-oil sectors of the Saudi Arabian economy is as follows:

- Beginning Stages– weak or non-existent long-term links with public and private expenditures, non-oil output. Short-term links may be present

- Partial Integration Stage—development of longer term links with public expenditures, possibly short term links with private expenditures, non-oil output

- Integrated Stage – strong links established with private expenditures, non-oil output. Possibly government involvement with strong links to one or more major expenditure categories. Possible weakening of short-term links.

- Mature Stage – weakening of government long-term linkages, maintenance of long term linkages with private sector expenditure/production

To these we might add a final self-sustaining stage in which all long-term links to the public sector had been broken, while at the same time strong long run links had been forged with private sector demand and/or output. As with all stage theories of economic development, a major area of controversy might center around how one moves from one stage to another. Is economic reform a key element? Is the composition of private sector investment critical and if so in what way? While these questions are largely beyond the scope of this study, the results below do shed some light on the subject..

Chart 1

Saudi Arabia: Government Expenditures and Non-Oil Output

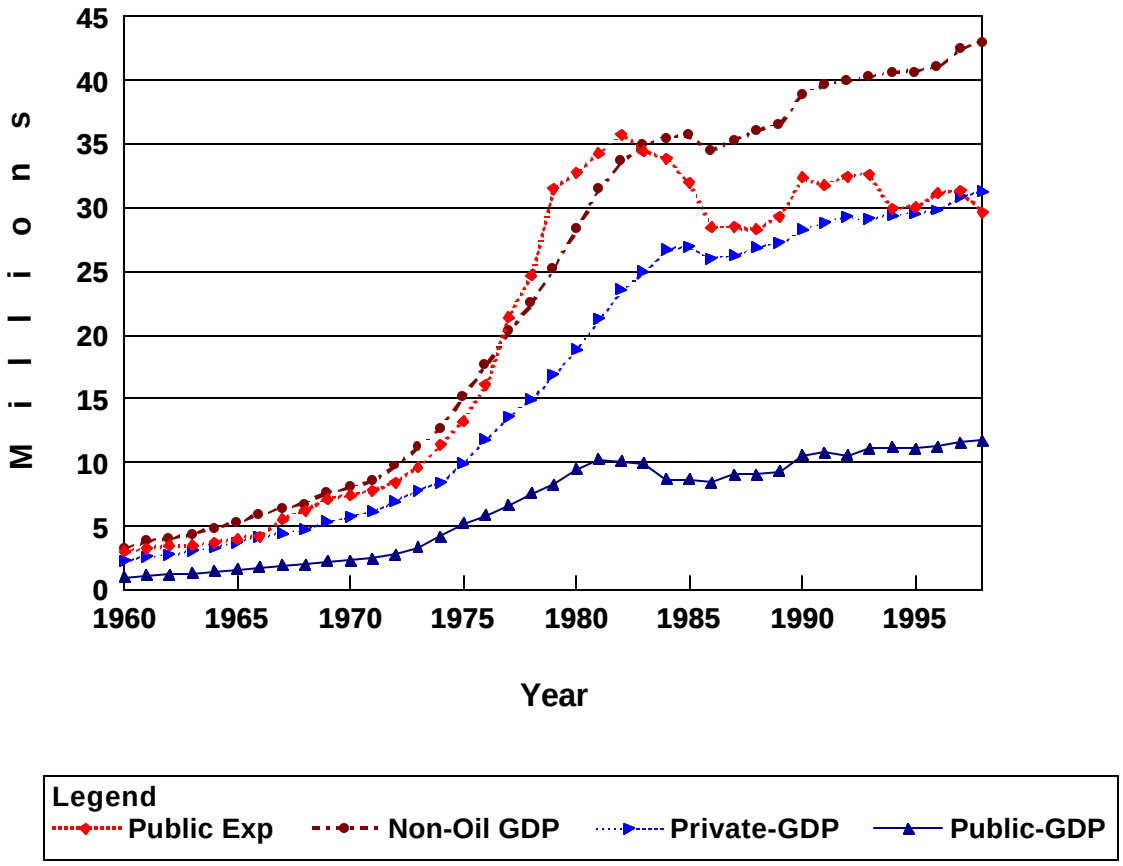
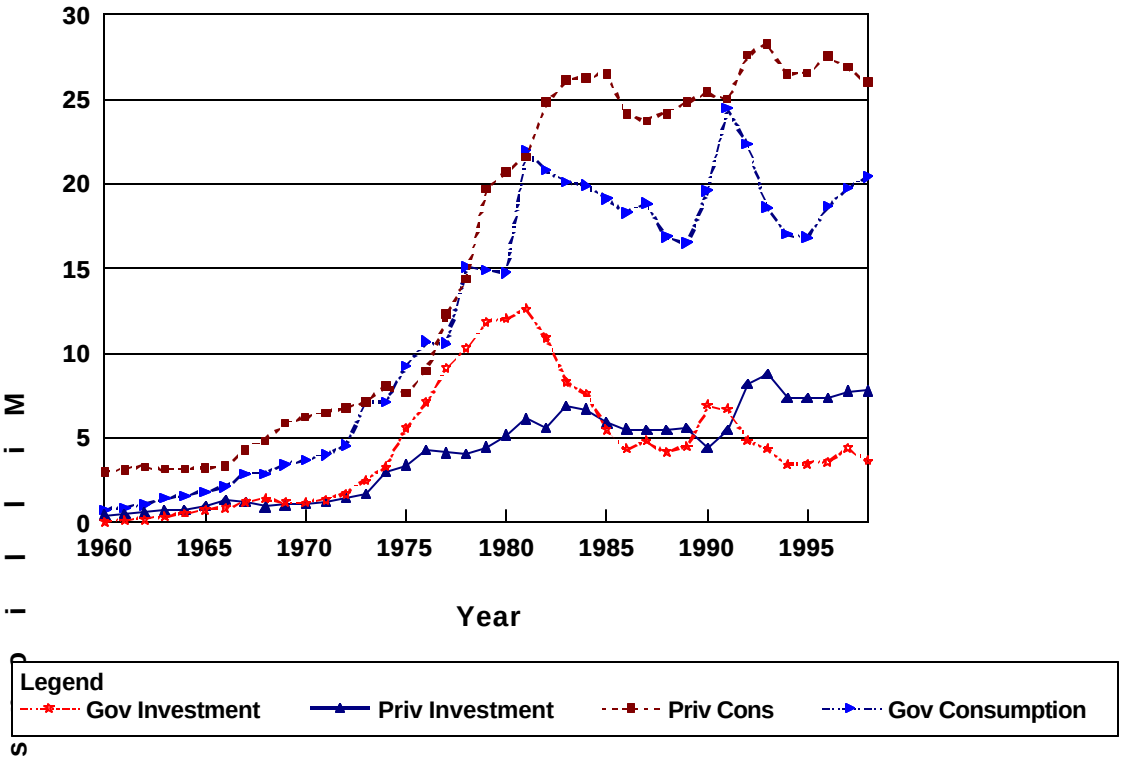


Chart 2

Saudi Arabia: Government Expenditures and Private Sector Expenditures



**Results**

The first step in the analysis was to examine the impact various types of public expenditure: (a) investment, consumption, defense and total budgetary allocations have had on total private sector GDP (Table 4). Here our main findings were that :

- The patterns have varied over time with a general weakening of the links to public expenditures.

- In particular, with the exception of public investment no type of public sector expenditure had a statistically significant (at the 95% level) in the most recent (1974-98 time period.

- In contrast pubic investment, defense and total public expenditures short-term link with private GDP was statistically significant at the 95% level in the earlier (1964-89) period.

- The long-term impacts also show a weakening. This is evidenced by the declining size of the coefficient on the error correction term (the size of the coefficient indicates the strength of adjustment to the long term pattern). For total public expenditures the 191974-98 coefficient was over half (0.33 vs. 0.15) of its 1964-89 value. Also the long-term investment private GDP term was barely significant at the 95 percent level, while it had been highly significant in the earlier period.

- Coinciding with the weakening of longer-term public sector links, a major source of private sector demand, private consumption was strengthened its long term links with private GDP, increasing the statistical significance of its long term adjustment with that variable from 90 percent in the first period to over 95 percent in the second.

To see to the extent this general pattern held up across the various non-oil sectors of the economy a similar analysis was undertaken for the various sectoral components of GDP, these included agriculture, mining, construction, manufacturing (non-refining); transport, power, finance, services and the like.

For purposes of classification of the state of development achieved by each sector, our examination also focused on not just on whether or not public expenditures were loosing their stimulating effect on output but also whether these expenditures were being replaced by private expenditures and if so which type of private expenditure were most effective in this regard. Of course, if private sector expenditures themselves remain highly linked to government expenditure, then the economy is not really becoming all that self-sufficient. Hence, a final set of error-correction tests were performed on the links between public and private expenditures to assess the extent to which private sector expenditures have become less dependent on public expenditure allocations

Agriculture

For the agricultural sector (Table 5) the analysis suggests a general weakening of public sector expenditures with time. This is evidenced by the statistically significant short-term impacts of non-defense expenditures and total budgetary expenditures in the 1964-89 period giving way to statistically insignificant impacts in the 1974-98 period. In fact, in no case did any of the major categories of pubic sector expenditures have a statistically significant impact on short run output during the 1974-98 period.

The longer-term pattern was even weaker. While consumption and defense appear to have a stable long-term pattern for the period as a whole, their links with the pattern of long-term agricultural growth during the 1974-98 period is only marginally (90% level) significant.

Anyone remotely familiar with Saudi Arabia knows the extent to which government subsidies and other supports have helped expand the Kingdom's agricultural sector. As noted in Table 3 there is a good chance that many of the governments initial programs for the sector have been scaled back. It is safe to say, therefore, that public expenditures are currently playing only a tangential role in stimulating further agricultural output. This may have been the case for some time.

For private expenditures a very different picture emerges. Here, all of the major categories, investment, and consumption and total expenditures increase their statistical significance with time. This is particularly true for short-term impacts where all three categories had a statistical insignificant impact on agricultural production in the earlier period. This changed to a positive and highly significant impact in the latter period. In addition the long-term coefficients of adjustment did not decline with time indicating that output in this sector has maintained a fairly constant expansion in line with private expenditures.

It is not clear whether this is a success story for the government. One interpretation might be that the declining government short run (subsidy impact) is no longer necessary, after accomplishing its original objectives. These programs have hence have been cut back and are no longer necessary to assure that sector's continued expansion.

Looking at expanded non-oil output as a source of stimulus for the agricultural sector it appears that none of the major categories, non-oil GDP, or its components, private GDP and public GDP have had a short run impact on agricultural output. On the other hand all three have established a long-term relationship with the sector. The coefficients on the error adjustment term suggest however that the lings with the private sector GDP are much stronger than those associated with increases in pubic sector GDP. In addition the private sector coefficients have strengthened over time (increasing from 0.10 in 1964-89 to 0.15 in 1974-98) while the public sector links have remained rather constant (at 0.03 to 0.04).

Non-Oil Manufacturing

A fairly clear picture unfolds for the critical non-oil manufacturing sector. Here there has clearly been a general weakening of the links between pubic expenditures and output (Table 6). The pattern has developed in both the short- and longer-term. For the short term, only defense remained a statistically significant (95% level) in the latter period. For the longer-term patterns, consumption, defense, non-defense and total budgetary expenditures formed a statistically significant long-term relationship with non-oil manufacturing in the 1964-89 period. By 1974-95 these patterns had broken down with no statistically significant (95% level) links remaining.

The role of defense is hard to explain. The links may be associated with the Kingdom's defense procurement offset program. This might account for the short run impact, but with little carry-over to a stable long-term link.

A totally different picture emerges for the private sector. Not only were the three main expenditure categories, investment, consumption and total expenditures statistically significant in both short-term periods, they were also statistically significant in the long term as well. Here, however, it should be noted that there (as evidenced by the decline in the value of the error-correction coefficient) was a general weakening of the longer-term inks with time.

Again speculating, the very limited impact of public sector investment in affecting growth of the non-oil manufacturing sector may, in turn, be a reflection of the limited role of this type of expenditure in increasing the productivity of private sector investment. This being the case, the productivity of private sector investment in this sector may be declining.

For the major components of Gross Domestic Product (GDP) another picture emerges. Here, increases in private sector GDP have provided a short run stimulus to non-oil manufacturing output. However private sector GDP has failed to establish any long-term stable pattern of expansion with non-oil manufacturing. Given manufacturing's stable long term relationship with the components of private sector expenditures, one must conclude that the Saudi Arabian non-oil manufacturing sector largely caters to final demand, with little output entering into intermediate stages of private sector production. This pattern is fairly common at early stages of industrialization. No doubt the true test of the success of the country's industrialization program will be whether or not activity spreads into the intermediate and capital stage of production. There is little evidence of this occurring to date.

Mineral and Mining

Saudi Arabia's mineral and mining sector is still a minor segment of the non-oil economy. However, it does have the potential for rapid growth and new mineral and ore discoveries are beginning to attract considerable attention.

Historically the public sector has had strong ties (Table 7) to the sector, although there signs that these may be weakening. Public investment, for example which had statistically significant links to the sector in the 1964-89 period, found these disappearing in the more recent 1974-98 period. There were also fairly considerable

declines in the size of the error correction coefficient over time for both public consumption and defense expenditures.

Private expenditures on the other hand appear to have strengthened their ties to the sector. Both private consumption and total private expenditures evolved from no short run statistical links in the early period to highly significant ties in the latter. In contrast to the general pattern experienced by public expenditures, the size of the error correction coefficient increased considerably in the case of private consumption and total private expenditures.

Construction

No other sector epitomizes oil-fueled expenditures more than the construction sector. Few can forget the images of 24 hour crash building programs in the years immediately following the 1973/74 oil price increases. There is no doubt that in these initial output was driven almost exclusively by government infrastructure and related expenditures. This is clearly confirmed by the error-correction analysis (Table 8) indicating a strong link between public sector investment and construction activity. However, contrary to what one might imagine, this association appears to be strengthening with time. This is evidenced mainly by the fact that the size of the coefficient on the error correction term nearly doubled during the latter 1974-98 period. Also government consumption formed a long (albeit) weak long-term link in the latter period where one was not present earlier.

An even more interesting situation arises with private sector expenditures. Here it appears that for the first time construction activity is not just fueled by government expenditures. Private investment, consumption and total expenditures shifted from a strong long run statistical link with the construction sector in 1974-98 where none had existed previously.

Construction's links with real output also appear to have strengthened over time. Both public and private GDP formed no strong long-term links with the sector during the 1964-89 period. However both developed these patterns in the subsequent period. Based on the size of the error coefficient the link with private sector GDP was considerably stronger than that associated with public sector output.. In addition both public and private sector GDP maintained strong short-term links to construction activity during both time periods.

Summing up, the construction is not dominated by public sector activity as in the past. Having said this it is apparent that in many ways the sector is still quite closely tied to the fates of government expenditures. On the other hand there are clear indications that important links are being forged with the private sector. In the future greater diversification of sources of stimulus should provide the sector with more stability than it has had in the past. While the boom or bust days are not completely over, it is apparent that the private sector is more and more able to pick up some of the slack when government expenditures contract sharply.

Wholesale and Retail Trade

The trade sector also shows the declining influence of government expenditures (Table 9). During the 1964-89 period, public investment, consumption, defense and (at the 90% level) total budgetary expenditures all formed long-term relationships with the sector. By 1974-98 however only consumption retained its links, and, based on a decline in the error-correction coefficient from 0.25 to 0.10 at a considerably weakened amount. On the other hand, several public sector expenditures: investment, defense, and total budgetary expenditures were still able to affect output in the sector over the short run.

Surprisingly private sector patterns did not strengthen with time. This is an area where one might anticipate that increased incomes and spending patterns throughout the Kingdom would be reflected in a rapidly expanding demand for retail goods and services. While it is true that the private sector did create ties to this sector early on, there is little evidence that they have strengthened with time. In fact the long term links between private sector investment consumption and total expenditures actually weakened during the latter, 1974-98 period, though not quite to the extent as those expenditures associated with the public sector. Similar patterns occurred with real output. Both private and public GDP formed short and long-term links with the sector, but there was a decline in the strength of the long term relationship with the passage of time.

Electricity, Gas and Water

This sector is currently experiencing great changes with privatization occurring, together with plans for increased investment and output. A complicating factor is that investment in the sector has lagged in recent years. In fact the government now estimates that this industry alone will require investment of $80 billion over the next 20 years to cater to the country's rapidly growing population (Economist, 2000), meaning that demand factors per se have been modified by capacity constraints.

As with several of the other sectors, public expenditure appears to be having less and less of a long term effect on the sector's fortunes (Table 10). Early on, the sector had formed statistically significant long-term links with government: (a) investment, (b) consumption, (c) defense, (d) non-defense, and (e) total budgetary expenditures. By 1974-98 only consumption maintained this link at a 95% level of confidence (and then at greatly diminished strength).

Private expenditures also formed early links with the sector. While these declined slightly in the second time period they are currently much stronger than those derived from public expenditures. In recent years, private consumption has also forged a strong short-term link with the sector.

As for production links to the sector, the pattern is clearly one of strengthening of the longer-term ties with time for the non-oil economy and public GDP. Non-oil GDP lost its short-term link with the sector, however this was clearly offset with the dramatic increase in the sectors long term coefficient (0.22 to 0.73).

The power sector is another where the private sector seems to be playing a larger role in affecting growth. While public expenditures still play a role in

stimulating further output, private sector demand, along with non-oil GDP appear, providing an expanding capacity, to be rapidly controlling the pace of expansion of the sector.

Transport and Communications

The patterns of expenditures/output on the transport/communications sector resemble those characterizing the power sector. Both public and private expenditures have played and continue to play an important role in affecting the expansion of the sector (Table 11). There are several subtle differences, however. The short-term links associated with public sector expenditures have been consistently strong and are present more or less across the board. With the exception of defense expenditures in the earlier period, every type of public expenditure has had a strong short-term link to the sector's output.

The long-term impact of public expenditures has weakened a bit with time in the sense that fewer categories have remained their statistical association with the sector's output. By 1974-98 public investment was no longer statistically linked with the sector's long run movements. Also, in the latter period, non-defense expenditures declined in statistical significance. Offsetting these developments has been the slight increase in public consumption's long-term impact on the sector's growth.

Private sector links to the transport/communications sector have in general strengthened over time. While the long-term link to private investment has weakened in recent years, both private consumption and total private expenditures have strengthened their long term links to the sector's output. The latter two expenditure categories have also maintained their strong short-term links to the sector.

Output links also appear to be strengthening. Non-oil GDP, public GDP and private GDP have all experienced increases in the size of their long-run coefficient. At the same time however, public GDP no longer has a short-term impact on the sector's output.

This is another sector that appears to be undergoing a gradual shift from public sector demand-led growth to that associated with developments in the private sector. This development is occurring both in terms of expenditures and also the strong links being forged with private sector GDP.

Financial Sector

Since the end of 1991 (the year of the Gulf War) the consolidated balance sheet of Saudi Arabia's banks has grown steadily, at an average annual rate of around 6.2 percent. Balance sheets grew by about 6.6 percent in 1997 and a further 2.9 percent to mid-year 1998 in line with the long-term trend. Leading this growth was the expansion of capital accounts, which increased at an average annual rate of more than 14 percent. The Bank for international Settlements (BIS) estimates of capital adequacy ratios of the Saudi banks as a group are upwards of 16 percent, more than twice the BIS minimums.

The Saudi Arabia stock market is by far the largest in the Middle East with a capitalization exceeding $50 billion. The World Bank has given the Saudi market high marks for its efficiency, transparency and quality of regulation. Except for investment by GCC individuals into selected shares and a single closed-ended fund, the Saudi market is largely closed to foreign investors. New measures to open the market are under review. Clearly even small steps in that direction would buoy investor confidence. An even more aggressive opening could bring about the re-rating of the market, where investors came to evaluate share prices in terms of their relationship to earnings growth expectations, as opposed to the prevailing approach which focuses on dividend yields. (Taecker, 1998).

This is an interesting sector in that the expenditures associated with both the public and private sectors are highly significant in the longer term (Table 12). Furthermore, based on the expanded size of the long-term coefficient there is clear evidence that these links are increasing with time. The short-run affects of public and private expenditures are also generally quite strong, especially the aggregate figures of total budgetary expenditures for the public sector and total private sector expenditures for the private sector.

Several of these patterns carry over into the sector's link with non-oil output. In particular private sector GDP has achieved strong links to the sector in both the short-and long-term. These links also appear to be strengthening, with the size of the long-term coefficient more than doubling (0.18 to 0.38) between 1964-89 and 1974-98. On the other hand there is evidence that links with public sector GDP, while still strong, are weakening a bit. While public sector GDP had a statistically significant short-run impact in the earlier period, the latter period showed no such link. Also the long run impact on the sector of public sector GDP declined, with the size of this coefficient falling from 0.38 to 0.21.

Summing up the sector as a whole appears to be gradually more dependent on private sector activity, both in terms of direct demand and output. While the public sector still plays a major role, there is no reason to expect a reversal of these patterns in the coming years.

The Service Sector – Community, Social and Personal

This is a diverse sector, and one that has experienced relatively rapid growth in recent years. Like the finance sector, it has established a number of links with the public and private sectors (Table 13). The public sector's immediate expenditure stimulus appears to be weakening a bit. In recent years, public: (a) consumption, (b) investment, (c) total non-defense allocations, and possibly total budgetary allocations have lost their ability to provide a short-run stimulus to the sector. On the other hand defense expenditures have maintained their strong-short run ties to the sector. On the other hand the longer-term linkages may becoming a bit stronger. Specifically, there has been an increase in the statistical significance of the long-run coefficient associated with: (a) public consumption, (b) non-defense expenditure and total budgetary allocations . At the same time there has not been a significant change in the value of the long run coefficients relative to the earlier (1964-1998) period.

In contrast to the public sector, private sector consumption and total expenditures have maintained their strong short run links to the sector. In addition they have experienced the same stability over time in their long run coefficients. It should be noted that the size of these coefficients are considerably larger expenditure category by expenditure category than those associated with public sector expenditures. This suggests of course that Riyal for Riyal private sector expenditures have a considerably greater long run impact than those associated with public sector activity.

This same pattern carried over to the links between the various categories of non-oil output and the service sector. As with private expenditures all the major categories of non-oil output experienced strong and continuous short run links with service output. Output's longer-term impacts also showed considerable stability with the size of the public sector's coefficient increasing significantly (0.13 to 0.23). It should be noted however that as with expenditures, the private sector appears to be considerably more efficient in stimulating longer run output.

Summarizing up, the various components of non-oil GDP have shown considerable change over time. Each sector has moved up the scale of integration (Table 14). These patterns confirm the hypothesis that the government's development strategy to date has been successful in creating an environment conducive to sustained growth in the non-oil portions of the economy (Figure 1).

Figure 1

Saudi Arabia: Evolution of the Non-oil Economy, 1964-

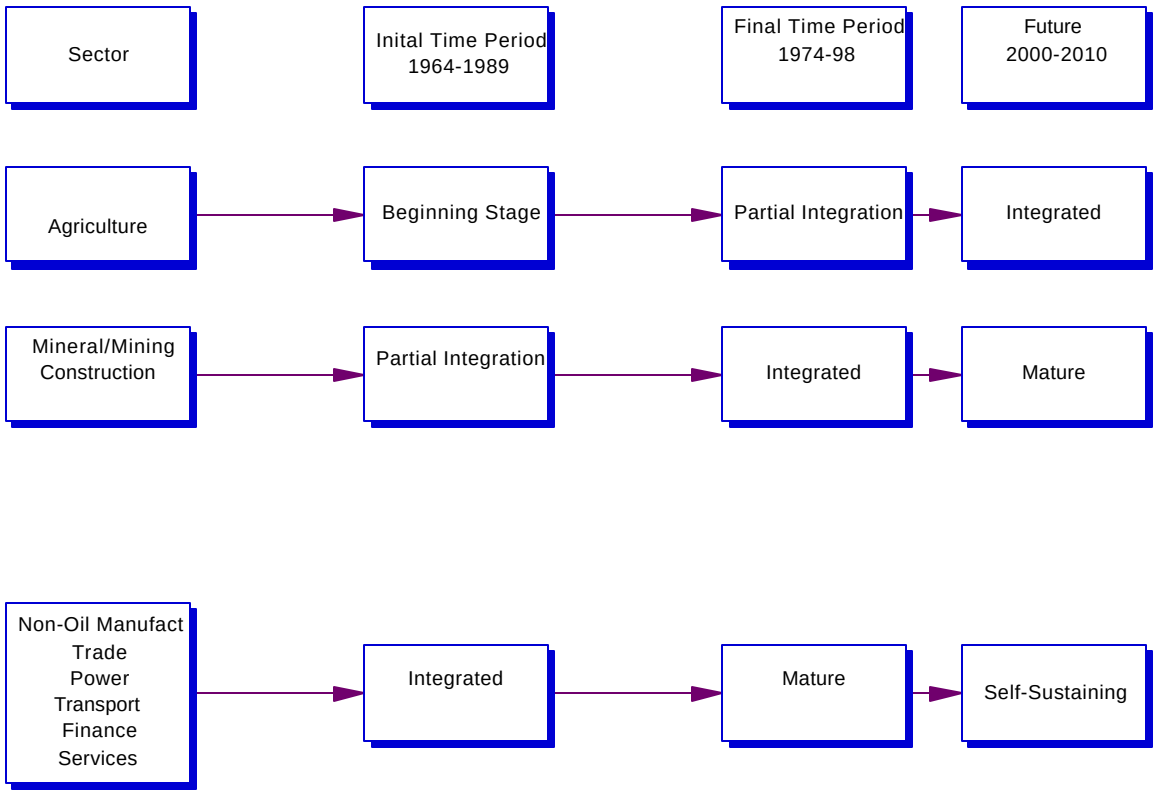


Table 14

Summary of Results

| Sector | Time Period | Public/Private Linkages | [Classification] |
|---|---|---|---|
| Agriculture | | | |
| | 1964-89 | Slight public sector short-run impact, no no long run impact. | [Beginning Stages] |
| | | Weak private sector long-run expenditure links no sort-run link. | |
| | | No non-oil short-run production link, established long-run production link | |
| | 1974-98 | No pubic sector expenditure impact. | [Partial Integration |
| | | Creation of strong short- and long- term private expenditure links | Stage] |
| | | Strengthening of long run non-oil production link | |
| Non-Oil Manufacturing | | | |
| | 1964-89 | Strong public sector short- and long-term links | [Integrated] |
| | | Strong private, expenditure short and long term links | |
| | | Strong non-oil output short- and long-term links | |
| | 1974-98 | Significant weakening of public-short and long term links | [Mature] |
| | | Slight weakening of private sector demand links | |
| | | Slight weakening of long run non-oil production links | |

Table 14 (contd)

Summary of Results

| Sector | Time Period | Public/Private Linkages | Classification |
|---|---|---|---|
| Mineral/Mining | | | |
| | 1964-89 | Several long- and short- run public sector links | [Initial Integration Stage] |
| | | No short or long-run private sector links, | |
| | | Weak short and long-run non-oil production links | |
| | 1974-98 | Slight weakening of public short and long term links | [Integrated Stage] |
| | | Development of private short and long term links | |
| | | Strengthening of production short- and long-term links | |
| Construction | | | |
| | 1964-89 | Strong long- and short-run links to public investment | [Initial Integration Stage] |
| | | Short-run link to private investment, no long run links | |
| | | Strong short- and long- run links to non-oil output | |
| | 1974-98 | Strengthening of public investment linkages, weakening public non-investment links | [Integrated Stage] |
| | | Development of private long-term links, weakening of short-term links | |
| | | Strengthening of non-oil short and long term production links | |

Table 14 (contd)

Summary of Results

| Sector | Time Period | Public/Private Linkages | Classification |
|---|---|---|---|
| Trade Sector | | | |
| | 1964-89 | Strong long and short run links to public expenditures | [Integrated Stage] |
| | | Strong long and short run links to private Expenditures | |
| | | Strong short-run link to non-oil production | |
| | 1974-98 | Weakening of public sector's short- and long term links | [Mature Stage] |
| | | Slight weakening of private sector long-run expenditure links | |
| | | Development of non-oil production links | |
| Power Sector | | | |
| | 1964-89 | Moderate short-term, strong – long term public expenditure links | [Integrated Stage] |
| | | Strong long-term, moderate short term private expenditure links | |
| | | Strong short term non-oil production links no long term links | |
| | 1974-98 | Weakening short and long term public expenditure links | [Mature Stage] |
| | | Slight weakening of private long-term/ sort-term links | |
| | | Development of long term non-oil production links, loss of short-run link | |

Table 14 (contd)

Summary of Results

| Sector | Time Period | Public/Private Linkages | Classification |
|---|---|---|---|
| Transport/Communications | | | |
| | 1964-89 | Strong short-and long-run public expenditure links | [Integrated Stage] |
| | | Strong short and long-run private expenditure links | |
| | | Strong short and long run non-oil production links | |
| | 1974-98 | Weakening of long-run public expenditure links | [Mature] Stage |
| | | Strengthening of private expenditure long run links | |
| | | Strengthening of non-oil long run production links | |
| Finance/RealEstate | | | |
| | 1964-89 | Strong short-and long run public expenditure links | [Integrated Stage] |
| | | Strong short, no long run private expenditure links | |
| | | Strong short and long-run non-oil production links | |
| | 1974-98 | Strengthening of public long-term expenditure links | [Mature Stage] |
| | | Strengthening of long-run private expenditure links | |
| | | Maintenance of short and long-term production links. | |

Table 14 (contd)

Summary of Results

| Sector | Time Period | Public/Private Linkages | Classification |
|---|---|---|---|
| Service Sector | | | |
| | 1964-89 | Strong short-run public expenditure links, Weak long run links | [Integrated Stage] |
| | | Strong short and long run private expenditure links | |
| | | Strong sort and long run non-oil output links | |
| | 1974-98 | Weakening short-run public expenditure links, strengthening long-run links | [Mature Stage |
| | | Maintenance of long run private expenditure links | |
| | | Maintenance of short, slight strengthening of long-run non-oil output links | |

**Factors Affecting Private Sector Expenditures**

While the previous sections have documented the increasingly important role of private sector expenditures in stimulating sectoral output, as noted earlier, it is not completely clear that the private sector itself is all that independent of a steady infusion of funds originating from the various government budgetary categories. Clearly, if the source of private expenditures is largely from public rather than private output, the ability of the private sector to provide adequate purchasing power independently of developments in the oil sector would be greatly reduced.

Total Private Expenditures

Combining private consumption and investment provides a summary figure for private sector activity. Clearly public sector expenditures (Table 15) have had a great influence on the pattern of private sector expenditures. However it is quite apparent that that linkage is weakening.

- Initially (1960-89) the main categories of public expenditure: (a) investment, (b) defense, (c) non defense and total budgetary expenditures provided a strong short-run stimulus to the private sector.

- Over time, however, several these short run linkages (defense/non-defense and investment) have weakened to the point (1980-98) where they have ceased to operate.

- More importantly, the longer-run linkages between public and private expenditures are weakening. In 1960-89, public investment, defense and total public expenditures had formed long-term linkages with private expenditures, these weakened considerably in the 1975-98 period. By 1980-98 none were statistically significant at the 95% level.

- Surprisingly changes in Oil's contribution to the country's GDP has not had a significant short run impact on total private expenditures. On the other hand oil has formed a stable long term link with private expenditures. Based on the increasing size of this long run coefficient, this link may well be increasing in importance.

- On the other hand, private production (GDP) has maintained strong short-run links to expenditure. In addition the longer-run links are highly significant and are strengthening with time.

It should be noted that the relative size of the private sector output coefficient dwarfs that associated with the oil sector. This suggests that while developments in the oil sector continue to have an important impact of private sector expenditures, they may account for a fairly low percentage of the year-to-year movement in this series.

Private Investment

Following Hirschman's (1958) unbalanced growth strategy, the Kingdom's planners have attempted to stimulate private sector activity through developing and extending major infrastructure projects.

- In the early years (1960-89) this strategy appeared to be paying high dividends with a strong short and long term link to private capital formation.

- Over time however, this link has been severed to the extent that by 1980-98 no statistically significant links existed between the two forms of investment. This weakening is not really related to the sharp decline in public investment in recent decades. Rather, it simply signifies that public investment has become much less effective in stimulating follow-on private sector activity.

- A somewhat similar pattern has occurred with defense, non-defense and total public expenditures. These began (1960-89) with strong linkages and finishined (1980-98) with little influence on private capital formation decisions.

- The links between output (Oil GDP and private sector GDP) and private investment are interesting in that Oil GDP has not had much of an affect on the private sector's pattern of short run investment. Over time, however, private investment has adjusted to developments in the oil sector.

- In contrast to its links to the oil sector, private investment has been stimulated by short run movements in private GDP as well as adjusting to the expansion over time in that series.

Again it should be noted that based on the size of the long-run coefficient, private investment responds much more dramatically to changes in private sector GDP than to changes in Oil GDP.

Private Consumption

Since private consumption the major component of private expenditures, the observed patterns are similar to those described above:

- Initially, public sector expenditures across the board provided a strong short and long rum impetus to this expenditure category.

- Again, with time these links have weakened to the point that, with the possible exception of short-run shocks associated with total budget allocations, private consumption patterns are affected by developments outside those controlled by the public sector.

- Private sector GDP appears to be a major factor determining the extent to which the private sector consumption evolves over time. Having said this, it is apparent (Table 15) that these lines are not nearly as strong as those associated with total private sector expenditures.

**Conclusions**

The findings of this study have a number of implications for the country's future growth. In a sense, the results suggest that Saudi Arabia's development strategy of diversification has been a success. The private sector appears to be playing a more and more productive role with time in that many of the non-oil sectors appear capable of sustained growth without a steady infusion of government expenditures. More importantly, it is clear that the private sector is not just filling a vacuum left by the contraction in government expenditures.

However, there are several negative sides to our findings. First, if the private sector stumbles, it is not clear that the public sector will have the ability (even with increased funding) to jump start the economy and sustain growth until private activity recovers. That growth will have to rely more and more on private sector activity and less on fiscal stimulus provided by the various types of government allocations. While effective in the past, these expenditures, with several exceptions appear to no longer have a major impact on many of the key non-oil sectors of the economy. The underlying causes of the shifts in relative economic power are difficult to pinpoint, at least within the scope of the present study. Several plausible explanations exist however. As noted, Middle Eastern countries with high (and sustained) levels of defense expenditures are beginning to pay the price for cutting back on economic expenditures to fund their military burdens. One might speculate that the defense-driven shifting composition of Saudi expenditures away from economic to non-economic allocations has weakened the direct economic strength of public expenditures.

Another possibility is that the changing domestic and world environment requires a different composition of polices/expenditures and that perhaps many of the on-going programs have simply hit diminishing returns. For example it is clear that recent technological revolutions and the importance of rapid exchanges of massive amounts of information are incompatible with a state-led economy. In addition, the diversification of the economy has reached a point where the government must consult with the private sector on the breath and depth of any policy, or, as was the case with the failed Saudi Attempt in 1988 to tax foreign business, suffer public embarrassment and the potential loss of valuable investment/technology.

A variant of this explanation is that while there has been a shift away from direct subsidies and an attempt to rely more on market driven solutions, it is not apparent that the government has fundamentally altered the manner in which it designs and carries out its economic programs. Ideally, as the private sector evolves from one stage to another: (a) beginning states, (b) partial integration stage, (c) integrated state, (d) mature stage government policies, government policies would also shift in a manner designed to capitalize on the capable of tapping the private sector's output potential at that point in time.

The second negative aspect of our results is that once the mature stage is reached there is no assurance that the private sector on either the expenditure or production side will be able to maintain established links. Weakening of private links has apparently occurred in non-oil manufacturing, trade and the power sector. Again

the cointegration/error correction analysis can not pinpoint the exact cause of this phenomena. However there is no doubt that a number of existing government restrictions and regulations may have stifled investment and limited the ability of firms to adapt to changing circumstances. Over time, restrictive government programs might well weaken the ties between private sector demand and non-oil sector output.

In particular it is safe to say that with a freer flow of international investment and market access, non oil output might have performed even better than it did. An encouraging sign are a series of economic reforms initiated in 1998 (Kemp, 1999). First , telecomms was corporatized in the spring as a prelude to a sell-off; a decision to merge all the electricity companies as the first step in a similar process was approved in November. The electricity reforms included tariff increases which will reduce the subsidy to consumers and help limit the huge losses run up by the electi9ricty companies. Operations at the ports and some local services were turned over to the private sector. A revised, less restrictive foreign investment code has been enacted.

Clearly the key to the country's economic future is the manner in how economic reforms proceed. Everett-Heath (1999) has noted that the dance of Saudi economic reform as often resembled a waltz: slow, slow, quick, quick, slow. Clearly however the numerous announcements made since mid-October 1999 suggest that reforms such as the foreign investment initiatives note above are now well into the implementation phase. The mutual fund market has been opened to foreign investors, and non-Saudis will be allowed to own real estate and take un-penalized majority states in local joint ventures. The sixth round of negotiations for membership in the world Trade Organization is moving forward, privatization is seen as a strategic choice and, most importantly the tax regime is under review for radical change (Everett-Heath (1999, p. 4).

Expanded inflows of foreign investment are critical. Levels of foreign investment in the Kingdom have been very low in recent years. In 1996 and 1997 there were net foreign capital outflows of $1,877 and $1, 129 million respectively. Cumulative inflows between 1984-87 totaled a mere $4,317 million, compared to $36,020 million in Malaysia or $51,412 million in Singapore—both countries with smaller gross domestic product (GDP) than Saudi Arabia. Analysts who point to the punitive Saudi Tax system and a restrictive regulatory environment as the main factors responsible for this poor performance agree that recently promised reforms could do much to reverse the trend and attract capital to the country (Everett-Heath (1999, p. 4).

The empirical results presented above show that the private sector is capable of forging strong links to the non-oil economy. However, the results also indicate that in the mature phase into which some sectors (manufacturing, trade, power for example) are moving that these links may be weakening a bit. What the country needs to do is draw on the progress made to date through developing a virtuous circle. Specifically the Saudi Share market is already well managed but it currently lacks the necessary depth or liquidity. A virtuous circle needs to be developed in which open capital markets with a strong regulatory framework can support the rapid the rapid growth

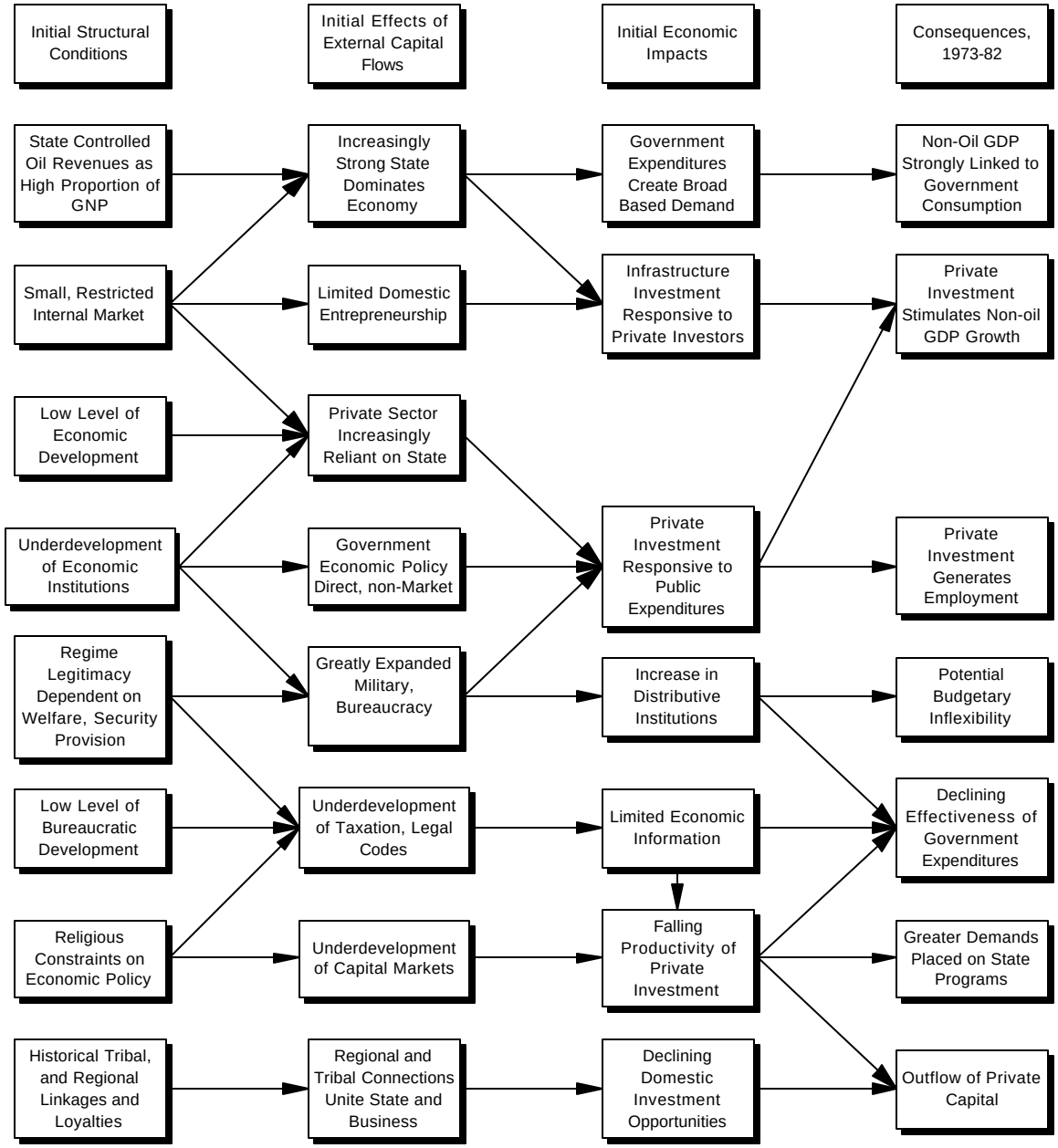
of private sector investment enterprise within the country. Higher levels of foreign direct investment (FDI) will be facilitated, and will encourage further growth of the markets. It is through mechanisms like this that the process of increased private sector integration can be strengthened and extended to the next stages of self-sustained development.

Perhaps most importantly, the error-correction results noted above together with the distinct possibility of developing a virtuous cycle along the lines noted above allow one to be much more optimistic about the Kingdom' economic prospects. Several years ago a conventional wisdom was that the oil boom years produced an economic expansion that was not sustainable. The key components of this line of argument are laid out in Figure 2, which shows the close links between government expenditures and private investment with non-oil output strongly linked to government consumption. The key element here is the declining effectives of government expenditures in stimulating output. Still with high levels of government expenditure the economy was able to expand during this period with many of its structural weaknesses masked behind expanding budgetary allocations. Falling profitability of private investment and an apparent increase in capital outflows were ominous signs of what was to follow the end of the boom.

As noted, the conventional interpretation (Figure 3) of the evolution of the economy during the post-oil boom years was quite pessimistic. Here the focus (Gause 2000) has been on budgetary cutbacks, the seeming inability of the government to push through economic reforms, increased public sector debt, the drying up of credit to the private sector, capital outflow and declining rates of private sector capital formation. Here, the conventional wisdom usually concluded that nothing positive was occurring in the non-oil economy. Furthermore, the non-oil economy would not be able to overcome the mounting obstacles and constraints impeding its growth. The end result of this process was little accomplished in terms of economic diversification and self sufficiency. Instead the economy was said to face years of increased unemployment, declining incomes and eventual political and social instability.

The error correction results noted above paint a somewhat different picture. Here, despite the decline in government expenditure and the relatively slow pace of economic reforms, the private sector was still able to evolve in a positive manner, forging a complex set of links to key non-oil segments of the economy. At the same time the private sector appears to have reduced its extreme dependency on governmental expenditures and direct subsidies. These developments and their possible causes are summarized in Figure 4. As for the future, Figure 5 outlines a possible virtuous cycle the Kingdom appears poised to take advantage of.

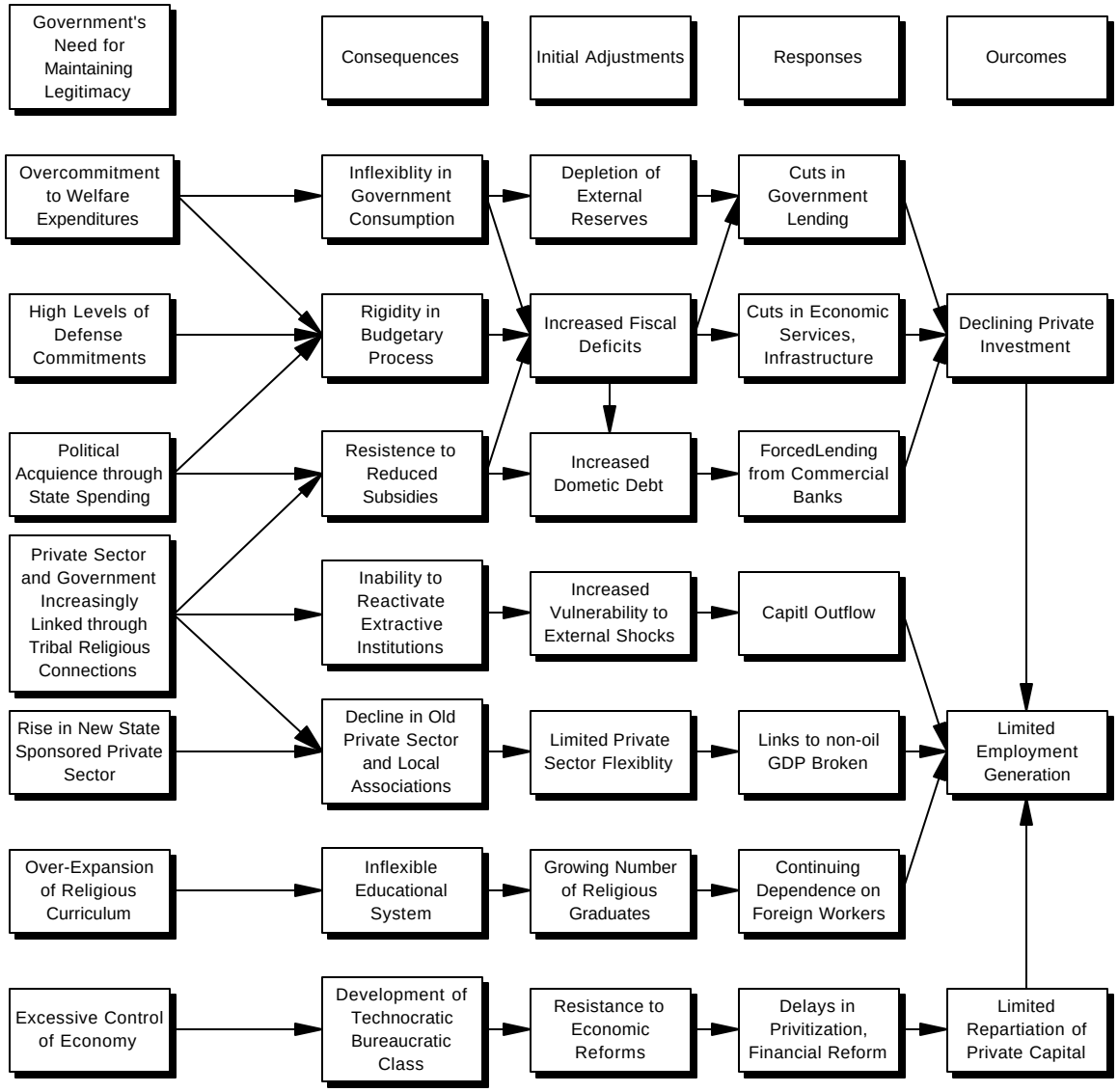
Figure 2
Development Model 1: Saudi Arabia Development During the Oil Boom Years




Source: Looney (1997, p.49)

Figure 3

Development During the Post Oil Boom Years: Pessimistic Assessment




Source: Looney (1997, p.50)

Figure 4

Development During the Post Oil Boom Years: Optimistic Assessment

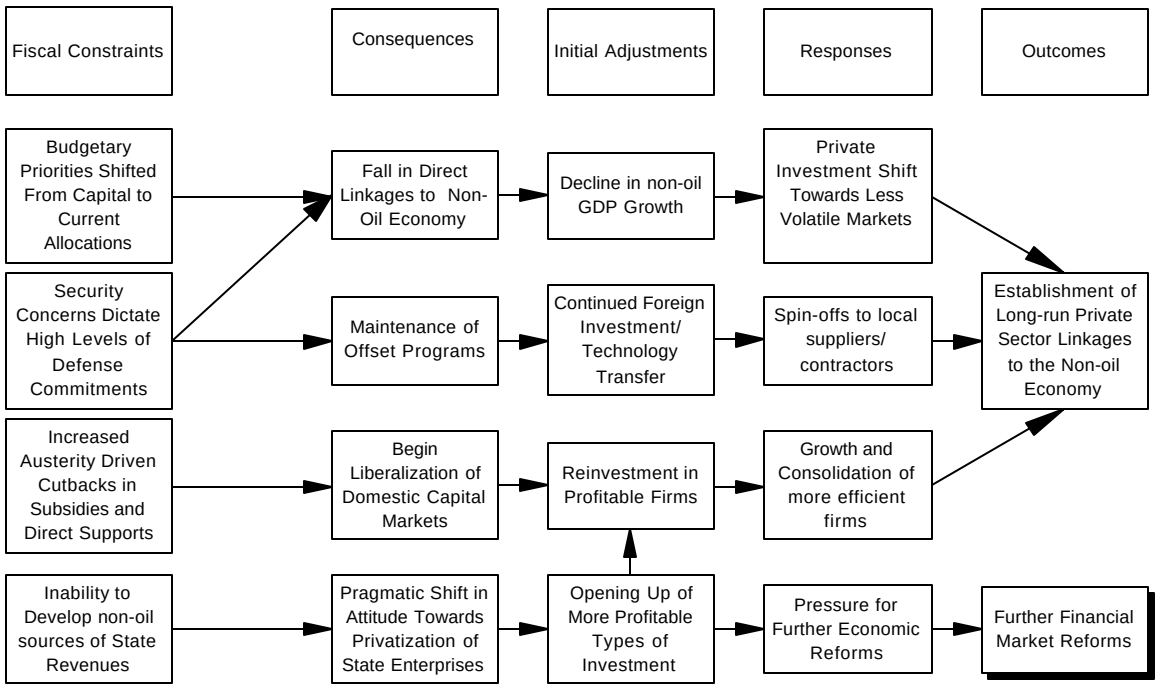


Figure 5

Saudi Arabia: Future Virtuous Cycle

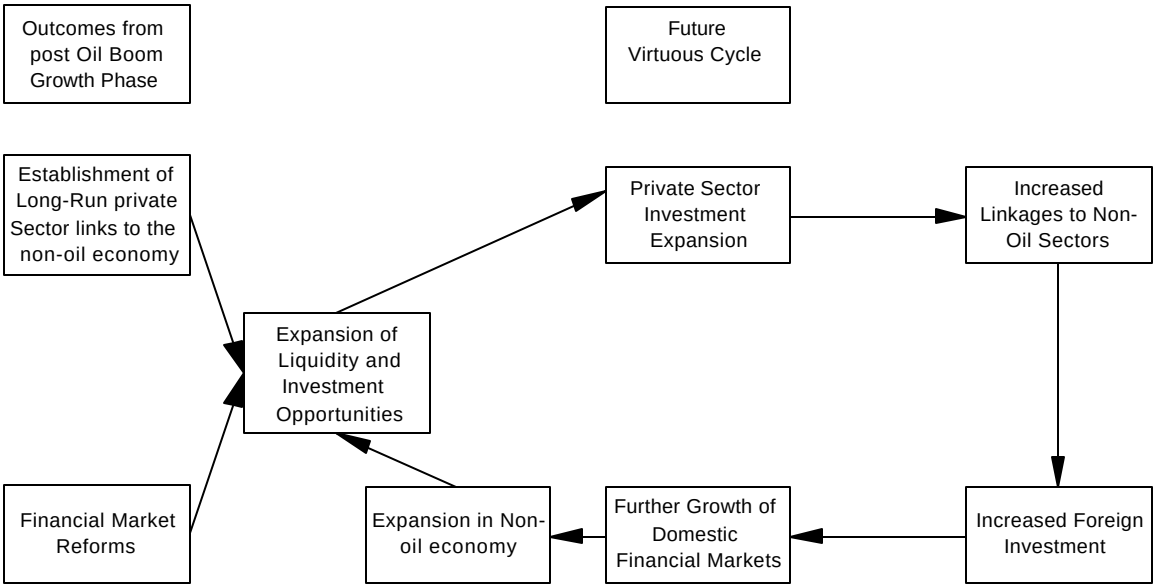


Table 4

Saudi Araiba: Influence of Public Expenditure on the Private Sector Economy

| Variable | Short-Run Impact 64-89 | Short-Run Impact 74-98 | Error Correction Term 1964-1998 | Error Correction Term 1964-1989 | Error Correction Term 1974-1998 |
|---|---|---|---|---|---|
| Private Sector GDP | | | | | |
| Public Investment | ** | ** | -0.03 (-4.74)** | -0.04 (-4.10)** | -0.03 (-2.12)** |
| Public Consumption | * | ins | -0.10 (-3.59)** | -0.24 (-6.93)** | -0.10 (-3.03)** |
| Defense | ** | * | -0.04 (-2.61)** | -0.11 (-7.28)** | -0.07 (-5.12)** |
| Total Public Exp | ** | * | -0.14 (-2.50)** | -0.33 (-7.26)** | -0.15 (-2.37)** |
| Private Consumption | * | * | -0.11 (-2.10)** | -0.15 (-1.95)* | -0.15 (-2.50)** |

Notes: Data from Saudi Arabian Monetary Authority, Annual Report various issues. All variables in constant 1969 prices. Error Correction Estimations equilibration performed using Pesaran, M.H. &, and B. Pesaran. Microfit 4.0: Interactive Econometric Analysis. Cambridge: Camfit Data Ltd, 1997.
( ) = t-statistic; ins = statistically insignificant; * significant at the 90% level; ** = significant at the 95% level.

Table 5

Short and Long-Term Influence of Public/Private Expenditures/Output on the Saudi Arabian Agricultural Sector

| Variable | Short-Run Impact | | Error Correction Term | | |
|---|---|---|---|---|---|
| | 64-89 | 74-98 | 1964-1998 | 1964-1989 | 1974-1998 |
| Public Sector | | | | | |
| Invest | ins | ins | -0.01 (-1.32) | -0.03 (-0.89) | -0.03 (-1.67) |
| Consumption | ins | ins | -0.03 (-2.44)** | -0.05 (-1.22) | -0.03 (-2.04)* |
| Defense | ins | ins | -0.02 (-2.48)** | -0.03 (-0.67) | -0.03 (-1.92)* |
| Non-Defense | ** | ins | -0.01 (-1.21) | -0.03 (-0.81) | -0.01 (-0.77) |
| Total Budgetary Exp | ** | ins | -0.13 (-1.25) | -0.09 (-0.85) | -0.02 (-0.21) |
| Private Expenditures | | | | | |
| Investment | ins | ** | -0.04 (-2.42)** | -0.03 (-0.71) | -0.05 (-2.32)** |
| Consumption | ins | ** | -0.07 (-3.58)** | -0.07 (-1.99)* | -0.05 (-2.34)** |
| Total Private Expend | ins | ** | -0.04 (-2.68)** | -0.05 (-1.42) | 0.05 (-2.42)** |
| Output | | | | | |
| Non-oil GDP | ins | ins | -0.12 (-7.10)** | -0.07 (-2.53)* | -0.11 (-5.95)** |
| Public GDP | ins | ins | -0.05 (-3.34)** | -0.03 (-0.69) | -0.04 (-2.10)** |
| Private GDP | ins | ins | -0.15 (-5.62)** | -0.10 (-2.84)** | -0.15 (-4.74)** |

Notes: Data from Saudi Arabian Monetary Authority, Annual Report various issues. All variables in constant 1969 prices. Error Correction Estimations equilibration performed using Pesaran, M.H. &, and B. Pesaran. Microfit 4.0: Interactive Econometric Analysis. Cambridge: Camfit Data Ltd, 1997. ( ) = t-statistic; ins = statistically insignificant; * significant at the 90% level; ** = significant at the 95% level.

Table 6

Short and Long-Term Influence of Public/Private Expenditures/Output on the Saudi Arabian Non-Oil Manufacturing Sector

| Variable | Short-Run Impact | | Error Correction Term | | |
|---|---|---|---|---|---|
| | 64-89 | 74-98 | 1964-1998 | 1964-1989 | 1974-1998 |
| Public Sector | | | | | |
| Invest | ins | ins | -0.01 (-0.62) | -0.01 (-1.13) | 0.01 (0.17) |
| Consumption | ins | ins | -0.42 (-1.88)* | -0.07 (-2.98)** | -0.04 (-1.50) |
| Defense | ** | ** | -0.03 (-2.50)** | -0.05 (-3.01)** | -0.04 (-2.58)* |
| Non-Defense | ** | * | -0.02 (-1.88)* | -0.04 (-2.50)** | -0.02 (-1.59) |
| Total Budgetary Expend | ** | * | -0.03 (-2.19)** | -0.05 (-2.85)** | -0.03 (-1.74)* |
| Private Expenditures | | | | | |
| Investment | ** | ** | -0.06 (-2.68)** | -0.07 (-3.04)** | -0.06 (-2.32)** |
| Consumption | ** | ** | -0.11 (-3.34)** | -0.21 (-7.08)** | -0.10 (-2.76)** |
| Total Private Expend | ** | ** | -0.11 (-3.70)** | -0.21 (-7.71)** | 0.11 (-3.08)** |
| Output | | | | | |
| Non-oil GDP | ** | ** | -0.17 (-4.40)** | -0.17 (-4.69)** | -0.16 (-2.10)* |
| Public GDP | ins | ** | -0.18 (-7.06)** | -0.20 (-8.10)** | -0.08 (-3.21)** |
| Private GDP | ** | ** | -0.01 (-0.07) | -0.03 (-0.24) | -0.03 (-0.43) |

Notes: Data from Saudi Arabian Monetary Authority, Annual Report various issues. All variables in constant 1969 prices. Error Correction Estimations equilibration performed using Pesaran, M.H. &, and B. Pesaran. Microfit 4.0: Interactive Econometric Analysis. Cambridge: Camfit Data Ltd, 1997. ( ) = t-statistic; ins = statistically insignificant; * significant at the 90% level; ** = significant at the 95% level.

Table 7

Short and Long-Term Influence of Public/Private Expenditures/Output
on the Saudi Arabian Mineral/Mining Sector

| Variable | Short-Run Impact 64-89 | Short-Run Impact 74-98 | Error Correction Term 1964-1998 | Error Correction Term 1964-1989 | Error Correction Term 1974-1998 |
|---|---|---|---|---|---|
| Public Sector | | | | | |
| Invest | ** | ins | -0.11 (2.25)** | -0.17 (-2.28)** | -0.16 (-1.70) |
| Consumption | ** | ** | -0.45 (-3.25)** | -0.65 (-2.62)** | -0.53 (-3.38)** |
| Defense | ** | ** | -0.20 (-2.81)** | -0.39 (-3.16)** | -0.27 (-2.70)** |
| Non-Defense | ins | ins | -0.10 (-1.29) | -0.17 (-1.17)** | -0.21 (-1.98)* |
| Total Budgetary Expend | ins | ins | -0.13 (-1.72)* | -0.26 (-1.76)* | -0.24 (-2.19)** |
| Private Expenditures | | | | | |
| Investment | ** | ** | -0.28 (-2.65)** | -0.78 (-4.78)** | -0.39 (-3.04)** |
| Consumption | ins | ** | -0.23 (-1.41) | 0.25 (-1.24) | -0.60 (-2.72)** |
| Total Private Expend | ins | ** | -0.03 (-0.58) | -0.39 (-1.80)* | -0.87 (-3.65)** |
| Output | | | | | |
| Non-oil GDP | ins | ** | -0.54 (-3.86)** | -0.40 (-1.80)* | -0.63 (-3.44)** |
| Public GDP | ** | ** | -0.50 (-3.88)** | -0.62 (-4.02)** | -0.03 (-2.08)** |
| Private GDP | ** | ** | -0.62 (-4.24)** | -0.70 (-3.72)** | -0.80 (-4.54)** |

Notes: Data from Saudi Arabian Monetary Authority, Annual Report various issues. All variables in constant 1969 prices. Error Correction Estimations equilibration performed using Pesaran, M.H. &, and B. Pesaran. Microfit 4.0: Interactive Econometric Analysis. Cambridge: Camfit Data Ltd, 1997. ( ) = t-statistic; ins = statistically insignificant; * significant at the 90% level; ** = significant at the 95% level.

Table 8

Influence of Public and Private Expenditures/Output
on the Saudi Arabian Construction Sector

| Variable | Short-Run Impact 64-89 | Short-Run Impact 74-98 | Error Correction Term 1964-1998 | Error Correction Term 1964-1989 | Error Correction Term 1974-1998 |
|---|---|---|---|---|---|
| Public Sector | | | | | |
| Invest | ** | ** | -0.09 (1.51) | -0.20 (-2.73)** | -0.36 (-5.67)** |
| Consumption | ins | ins | -0.08 (-1.57) | 0.15 (-1.24) | -0.12 (-2.32)** |
| Defense | ** | ** | -0.04 (-0.36) | -0.05 (-0.30) | -0.13 (-1.16) |
| Non-Defense | ins | ins | 0.39 (4.93)** | 0.51 (5.39)** | 0.28 (2.48)** |
| Total Budgetary Allocations | ins | ins | 0.41 (4.23)** | 0.58 (4.88)** | 0.27 (2.06)* |
| Private Expenditures | | | | | |
| Investment | ** | ins | -0.06 (-1.58) | -0.14 (-1.54) | -0.13 (-2.79)** |
| Consumption | ins | ins | -0.05 (-1.11) | -0.03 (-0.24) | -0.12 (-2.41)** |
| Total Private Expend + | ins | ins | -0.06 (-1.30) | -0.07 (-0.62) | -0.13 (-2.54)** |
| Output | | | | | |
| Non-oil GDP | ** | ** | -0.15 (-3.31)** | 0.23 (-3.12) | -0.23 (-4.95)** |
| Public GDP | ** | ** | -0.07 (-1.94)* | -0.04 (-0.43) | -0.04 (-2.65)** |
| Private GDP | ins | ** | -0.03 (-0.34) | -0.04 (-0.31) | -0.31 (-5.50)** |

Notes: Data from Saudi Arabian Monetary Authority, Annual Report various issues. All variables in constant 1969 prices. Error Correction Estimations equilibration performed using Pesaran, M.H. &, and B. Pesaran. Microfit 4.0: Interactive Econometric Analysis. Cambridge: Camfit Data Ltd, 1997. ( ) = t-statistic; ins = statistically insignificant; * significant at the 90% level; ** = significant at the 95% level.

Table 9

Short and Long-Term Influence of:
Public/Private Expenditures/Output on Saudi Arabian Trade Sector

| Variable | Short-Run Impact | | Error Correction Term | | |
|---|---|---|---|---|---|
| | 64-89 | 74-98 | 1964-1998 | 1964-1989 | 1974-1998 |
| Public Sector | | | | | |
| Invest | ** | ** | -0.02 (-1.65) | -0.08 (-9.07)** | -0.10 (-0.51) |
| Consumption | ** | ins | -0.11 (-3.16)** | -0.25 (-4.14)** | -0.10 (-2.70)** |
| Defense | ** | ** | -0.03 (-1.44) | -0.11 (-3.04)** | -0.05 (-1.73) |
| Non-Defense | ins | ins | -0.01 (-0.35) | -0.04 (-1.20) | -0.04 (-1.31) |
| Total Budgetary Exp | ins | ** | -0.01 (-0.58) | -0.08 (-1.92)* | -0.04 (-1.29) |
| Private Expenditures | | | | | |
| Investment | ins | ins | -0.04 (-1.47) | -0.13 (-2.61)** | -0.05 (-1.73)* |
| Consumption | ** | ** | -0.25 (-4.07)** | 0.36 (-3.24)** | -0.26 (-4.09)** |
| Total Private Expend | ** | ** | -0.19 (-3.32)** | -0.38 (-4.63)** | -0.17 (-2.77)** |
| Output | | | | | |
| Non-oil GDP | ** | ** | -0.13 (-2.26)** | -0.12 (-1.27) | -0.09 (-1.73)* |
| Public GDP | ** | ** | -0.14 (-4.83)** | -0.19 (-5.87)** | -0.13 (-4.03)** |
| Private GDP | ** | ** | -0.17 (-3.52)** | -0.28 (-3.37)** | -0.16 (-2.82)** |

Notes: Data from Saudi Arabian Monetary Authority, Annual Report various issues. All variables in constant 1969 prices. Error Correction Estimations equilibration performed using Pesaran, M.H. &, and B. Pesaran. Microfit 4.0: Interactive Econometric Analysis. Cambridge: Camfit Data Ltd, 1997. ( ) = t-statistic; ins = statistically insignificant; * significant at the 90% level; ** = significant at the 95% level.

Table 10

Influence of Public/Private Expenditures/Output
on the Saudi Arabian Electricity, Gas and Water Sector

| Variable | Short-Run Impact | | Error Correction Term | | |
|---|---|---|---|---|---|
| | 64-89 | 74-98 | 1964-1998 | 1964-1989 | 1974-1998 |
| Public Sector | | | | | |
| Invest | ins | ins | -0.14 (-1.57) | -0.20 (-2.73)** | -0.15 (-1.41) |
| Consumption | ins | ** | -0.43 (-2.87)** | -0.71 (-2.94)** | -0.45 (-2.75)** |
| Defense | ins | ** | -0.14 (-1.11) | -1.21 (-5.75)** | -0.14 (-1.08) |
| Non-Defense | ** | ins | -0.20 (-1.87)* | -0.54 (-2.69)** | -0.22 (-1.82)* |
| Total Budgetary | ** | ins | -0.13 (-1.08) | -0.58 (-2.88)** | -0.23 (-1.88)* |
| Private Expenditures | | | | | |
| Investment | ins | ins | -0.39 (-2.35)** | -0.53 (-2.22)** | -0.40 (-2.18)** |
| Consumption | ins | ** | -0.61 (-4.06)** | -0.67 (-2.73)** | -0.61 (-2.96)** |
| Total Private Expend | ** | * | -0.63 (-3.23)** | -0.71 (-2.93)** | -0.65 (-2.99)** |
| Output | | | | | |
| Non-oil GDP | ** | ins | -0.54 (-3.14)** | -0.22 (-1.14) | -0.73 (-3.17)** |
| Public GDP | ** | ** | -0.63 (-4.67)** | -0.64 (-3.80)** | -0.73 (-5.35)** |

Notes: Data from Saudi Arabian Monetary Authority, Annual Report various issues. All variables in constant 1969 prices. Error Correction Estimations equilibration performed using Pesaran, M.H. &, and B. Pesaran. Microfit 4.0: Interactive Econometric Analysis. Cambridge: Camfit Data Ltd, 1997.

( ) = t-statistic; ins = statistically insignificant; * significant at the 90% level; ** = significant at the 95% level.

Table 11

Influence of Public/Private Expenditures/Output
on the Saudi Arabian Transport and Communications Sector

| Variable | Short-Run Impact 64-89 | Short-Run Impact 74-98 | Error Correction Term 1964-1998 | Error Correction Term 1964-1989 | Error Correction Term 1974-1998 |
|---|---|---|---|---|---|
| Public Sector | | | | | |
| Invest | ** | ** | -0.06 (-2.10)** | -0.08 (-1.91)* | 0.04 (0.97) |
| Consumption | ** | ** | -0.22 (-3.43)** | -0.29 (-3.22)** | -0.43 (-4.46)** |
| Defense | ins | ** | -0.12 (-3.29)** | -0.12 (-1.70)** | -0.10 (-2.26)** |
| non-Defense | ** | ** | -0.11 (-3.08)** | -0.18 (-2.99)** | -0.09 (-2.00)* |
| Total Budgetary | ** | ** | -0.12 (-3.24)** | -0.19 (-3.16)** | -0.09 (-2.15)** |
| Private Expenditures | | | | | |
| Investment | ins | ins | -0.14 (-2.06)** | -0.30 (-3.01)** | -0.15 (-2.05)* |
| Consumption | ** | ** | -0.56 (-5.16)** | -0.63 (-4.70)** | -0.88 (-6.21)** |
| Total Private Expend | ** | ** | -0.47 (-4.44)** | -0.56 (-4.27)** | -0.74 (-5.67)** |
| Output | | | | | |
| Non-oil GDP | ** | ** | -0.53 (-2.26)** | -0.55 (-4.08) | -0.73 (-6.42)** |
| Public GDP | ** | ins | -0.35 (-4.29)** | -0.39 (-4.02)** | -0.52 (-5.36)** |
| Private GDP | ** | ** | -0.52 (-3.29)** | -0.59 (-2.88) | -0.77 (-5.63)** |

Notes: Data from Saudi Arabian Monetary Authority, Annual Report various issues. All variables in constant 1969 prices. Error Correction Estimations equilibration performed using Pesaran, M.H. &, and B. Pesaran. Microfit 4.0: Interactive Econometric Analysis. Cambridge: Camfit Data Ltd, 1997. ( ) = t-statistic; ins = statistically insignificant; * significant at the 90% level; ** = significant at the 95% level.

Table 12

Influence of Public/Private Expenditures/Output
on the Saudi Arabian Financial Sector

| Variable | Short-Run Impact 64-89 | Short-Run Impact 74-98 | Error Correction Term 1964-1998 | Error Correction Term 1964-1989 | Error Correction Term 1974-1998 |
|---|---|---|---|---|---|
| Public Sector | | | | | |
| Invest | ** | ins | -0.13 (-3.20)** | -0.25 (-5.20)** | -0.43 (-6.72)** |
| Consumption | ** | ins | -0.13 (-1.83)* | -0.34 (-2.37)** | -0.21 (-2.89)** |
| Defense | ** | ** | -0.22 (-2.35)** | -0.33 (-2.48)** | -0.49 (-5.45)** |
| Non-Defense | ins | ** | -0.12 (-1.74)* | -0.16 (-1.58) | -0.41 (-5.09)** |
| Total Budgetary Allocations | ins | ** | -0.16 (-1.99)* | -0.24 (-1.92)* | -0.48 (-5.65)** |
| Private Expenditures | | | | | |
| Investment | ** | ins | -0.10 (-1.84)* | -0.18 (-1.24) | -0.21 (-3.53)** |
| Consumption | ** | ** | -0.06 (-1.60) | -0.12 (-0.87)- | -0.22 (-3.54)** |
| Total Private Expend | ** | ** | -0.10 (-1.65) | -0.18 (-1.49) | -0.20 (-3.53)** |
| Output | | | | | |
| Non-oil GDP | ** | ** | -0.21 (-3.69)** | -0.28 (-2.63)** | -0.27 (-5.25)** |
| Public GDP | ** | ins | -0.08 (-1.42) | -0.38 (-3.51)** | -0.21 (-3.47)** |
| Private GDP | ** | ** | -0.19 (-2.97)** | -0.18 (-1.63)** | -0.38 (-7.0)** |

Notes: Data from Saudi Arabian Monetary Authority, Annual Report various issues. All variables in constant 1969 prices. Error Correction Estimations equilibration performed using Pesaran, M.H. &, and B. Pesaran. Microfit 4.0: Interactive Econometric Analysis. Cambridge: Camfit Data Ltd, 1997. ( ) = t-statistic; ins = statistically insignificant; * significant at the 90% level; ** = significant at the 95% level.

Table 13

Influence of Public/Private Expenditures/Output
on the Saudi Arabian Service Sector (Community, Social, and Personal)

| Variable | Short-Run Impact 64-89 | Short-Run Impact 74-98 | Error Correction Term 1964-1998 | Error Correction Term 1964-1989 | Error Correction Term 1974-1998 |
|---|---|---|---|---|---|
| Public Sector | | | | | |
| Invest | ** | ins | -0.03 (-1.85)* | -0.04 (-1.14) | -0.05 (-1.52) |
| Consumption | ** | ins | -0.12 (-2.98)** | -0.15 (-2.49)** | -0.11 (-2.75)** |
| Defense | ** | ** | 0.03 (2.33)** | 0.09 (-2.02)* | -0.08 (-3.07)** |
| Non-Defense | ** | ins | -0.06 (-2.82)** | -0.08 (-1.89)* | -0.08 (-2.86)** |
| Total Budget | ** | * | -0.06 (-2.99)** | -0.08 (-1.99)* | -0.08 (-2.94)** |
| Private Expenditures | | | | | |
| Investment | ins | ins | -0.15 (-3.40)** | -0.25 (-4.62)** | -0.14 (-3.20)** |
| Consumption | ** | ** | -0.21 (-3.17)** | -0.23 (-2.41)** | -0.21 (-3.05)** |
| Total Private Expend | ** | ** | -0.21 (-3.27)** | -0.24 (-2.68)** | -0.20 (-2.93)** |
| Output | | | | | |
| Non-oil GDP | ** | ** | -0.44 (-5.00)** | -0.40 (-3.92)** | -0.43 (-4.10)** |
| Public GDP | ** | ** | -0.24 (-4.11)** | -0.13 (-2.31)** | -0.23 (-3.66)** |
| Private GDP | ** | ** | -0.62 (-5.95)** | -0.60 (-4.58)** | -0.60 (-5.10)** |

Notes: Data from Saudi Arabian Monetary Authority, Annual Report various issues. All variables in constant 1969 prices. Error Correction Estimations equilibration performed using Pesaran, M.H. &, and B. Pesaran. Microfit 4.0: Interactive Econometric Analysis. Cambridge: Camfit Data Ltd, 1997. ( ) = t-statistic; ins = statistically insignificant; * significant at the 90% level; ** = significant at the 95% level.

Table 15

Influence of Public Expenditure on Private Expenditures and Output

| Variable | Short Run Impact | | | Error Correction Term | | | |
|---|---|---|---|---|---|---|---|
| | 60-89 | 74-98 | 80-98 | 1960-1998 | 1960-1989 | 1974-1998 | 1980-1998 |
| Total Private Expenditures | | | | | | | |
| Public Expenditures (Demand) | | | | | | | |
| Public Investment | ** | ** | ins | -0.06 (-2.93)** | -0.09 (-4.17)** | -0.07 (-1.81)* | -0.24 (-1.22) |
| Defense | ** | * | ins | -0.12 (-3.43)** | -0.22 (5.05)** | -0.15 (-3.21)** | -0.29 (-1.91)* |
| Non-Defense | ** | * | ins | -0.10 (-3.33) | -0.15 (-3.57) | -0.14 (-3.29)** | -0.23 (-1.81)* |
| Total Public Exp | ** | ** | ** | -0.20 (-2.96)** | 0.23 (-3.36)** | -0.19 (-2.25)** | -0.20 (-1.81)* |
| Gross Domestic Product (Supply) | | | | | | | |
| Private GDP | ** | ** | ** | -0.55 (-3.66)** | -0.45 (-3.10)** | -0.60 (-3.10)** | -0.67 (-3.32)** |
| Oil-GDP | ins | ins | ins | -0.07 (-2.95)** | -0.05 (-2.34)** | -0.10 (2.26)** | -0.29 (-2.47) |
| Private Investment | | | | | | | |
| Public Expenditures (Demand) | | | | | | | |
| Public Investment | ** | ins | ins | -0.07 (-1.41) | -0.14 (-2.48)** | -0.33 (-2.96)** | -0.33 (-1.64) |
| Defense | ** | ins | ins | -0.19 (-1.98)* | -0.24 (-2.01)* | -0.26 (-2.24)** | -0.31 (-1.82) |
| Non-Defense | ins | ins | ins | -0.09 (-1.30) | -0.14 (-1.27) | -0.21 (-2.08)** | -0.32 (-1.85)* |
| Total Public Exp | ** | ins | ins | -0.28 (-2.66)** | -0.41 (-2.98)** | -0.30 (-2.35)** | -0.29 (-1.73) |
| Gross Domestic Product (Supply) | | | | | | | |
| Private GDP | ** | ** | ins | -0.55 (-3.52)** | -0.58 (2.98)** | -0.61 (3.26)** | -0.60 (-2.66)** |
| Oil-GDP | ** | ins | ** | -0.11 (2.32)** | -0.07 (-1.92)* | -0.19 (-2.14)** | -0.37 (-2.46)** |

Table 15 (contd)
Influence of Public Expenditure on Private Expenditures

| Variable | Short Run Impact | | | Error Correction Term | | | |
|---|---|---|---|---|---|---|---|
| | 60-89 | 74 98 | 80-98 | 1960-1998 | 1960-1989 | 1974 1998 | 1980-1998 |
| Private Consumption | | | | | | | |
| Public Expenditures (Demand) | | | | | | | |
| Public Investment | ** | ** | ins | -0.07 (-3.37)** | -0.09 (-3.38)** | -0.06 (-1.64) | -0.26 (-1.23) |
| Defense | ** | ** | ins | -0.13 (-4.03)** | -0.21 (-4.50)** | -0.15 (-3.47)** | -0.29 (-1.93)* |
| Non-Defense | ** | ** | ins | 0.11 (-4.20)** | -0.17 (-3.77)** | -0.14 (-3.64)** | -0.23 (-1.84)* |
| Total Public Expend | ** | ** | ** | -0.17 (-2.95)** | -0.16 (1.86)* | -0.15 (-2.42)** | -0.09 (-0.87) |
| Gross Domestic Product (Supply) | | | | | | | |
| Private GDP | ** | ** | * | -0.35 (-2.67)** | -0.46 (-2.93)** | -0.30 (-1.73)* | -0.49 (-2.03)** |
| Oil-GDP | ins | ins | * | -0.07 (-2.80)** | -0.05 (-1.91)** | -0.09 (-2.16)** | -0.23 (-2.11)** |

Notes: Data from Saudi Arabian Monetary Authority, Annual Report various issues. All variables in constant 1969 prices. Error Correction Estimations equilibration performed using Pesaran, M.H. &, and B. Pesaran. Microfit 4.0: Interactive Econometric Analysis. Cambridge: Camfit Data Ltd, 1997.
( ) = t-statistic; ins = statistically insignificant; * significant at the 90% level; ** = significant at the 95% level.

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